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The Old, the New, and the States,
The Evolution of the Regulation of Air Toxics

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I. INTRODUCTION

The activism associated with America in the 1960s spilled over into many areas, one of which was a new environmental movement. A product of that movement was the Clean Air Act passed in 1970.¹ The new law included a section aimed specifically at controlling emissions of hazardous or toxic air pollutants.² However, over the next 20 years there was very little government regulation of air toxics, and this section of the Clean Air Act was considered to be a resounding failure.³ What went wrong? How did this lofty goal to protect human health and the environment end up on the back burner? This article will address the idealism that led to the Clean Air Act legislation, in particular the air toxics program, and explore the realities that scuttled those ideals when it came time to implement the law.

An examination of the original air toxics program and its minor revisions over the years is useful to understand the Clean

1. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1678 (codified as amended at 42 U.S.C. § 7408(Supp. II 1990)).

2. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1678 (codified as amended at 42 U.S.C. § 7412(Supp. II 1990)).

3. Philip Weinberg, *To Sheathe the Air-Drawn Dagger: The Quest for a Hazardous Air Pollutants Policy*, 1990 ANN. SURV. AM. L. 99(1990).

Air Act Amendments passed in 1990.⁴ The early failures of the Clean Air Act provided valuable lessons when it came time to consider new air toxics legislation. The first 20 years of the program were examined by Congress and attempts were made to fill the gaps and correct the defects of the early air toxics program.⁵ The new air toxics program will be discussed in detail, and examined against the backdrop of prior failures and inaction. Development of regulations to implement the major provisions of the new air toxics program will also be scrutinized to determine if the sins of the father will be visited upon the sons.

An important aspect of both the old Clean Air Act and the 1990 amendments is how they were received at the state level. Because of failures of political policy and federal implementation, the states have taken on responsibilities traditionally managed at only the federal level. In fact, some experts believe the most important environmental innovations occur at the state level.⁶ However, an examination of the air toxics program and its implementation at the state level reveals various levels of commitment and involvement. Why have some

4. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (1990) (codified at 42 U.S.C. §§7401-7671q (Supp. II 1990)).

5. Worthen, *The Last Shall Be First and the First Last: Ruminations on the Past, Present, and Future Course of Government Regulation of Hazardous Pollutants*, 1989 B.Y.U. L. REV. 1113 (1989).

6. Shabecoff, *The Environment as Local Jurisdiction*, N.Y. TIMES, Jan. 22, 1989, at E9. This article quotes Jonathan Lash in his role as head of Vermont's environmental agency.

states taken on a larger regulatory role, and why are others still relying on federal direction? What are the decisions to be made by the states when considering the degree of responsibility to accept? This trend of state involvement illustrated with a brief summary of three different states with three different approaches to implementation of an air toxics program.

By taking a historical perspective on the early toxics program, and looking at how the states responded, we may be able to predict the impacts of the 1990 amendments. Will the new legislation covering air toxics repeat past mistakes, will it succeed, or will it encounter a new array of problems and obstacles?

II. EARLY APPROACH TO AIR TOXICS UNDER THE CAA OF 1970

A. BACKGROUND

Earth Day 1970 was significant in that it solidified an environmental movement and focused national attention on a myriad of environmental issues, including air pollution.⁷ The early focus of federal concern regarding air pollution was generally narrow in scope and concentrated on specified "criteria pollutants."⁸ The federal program dictated the promulgation of

7. MICHAEL H. BROWN, TOXIC CLOUD, 7 (1987). Earth Day was April 22, 1970.

8. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1678 (codified as amended at 42 U.S.C. § 7408 (continued...))

federal ambient air quality standards for the criteria pollutants,⁹ and in turn, the states were to implement emission controls that would effectively achieve these standards.¹⁰

In addition to the standards required for criteria pollutants, the 1970 Clean Air Act Amendments included a provision designed to complement the ambient air quality program and deal specifically with "hazardous pollutants" emitted from stationary sources.¹¹ Hazardous air pollutants were generally defined as "an air pollutant to which no ambient air quality standard is applicable and which in the judgment of the Administrator may cause, or contribute to, an increase in

8. (...continued)
(Supp. II 1990)). The criteria pollutants under the 1970 legislation were ozone, hydrocarbons, carbon monoxide, particulate, sulphur dioxide, and nitrogen dioxide. These pollutants are almost universally found throughout the ambient air at high levels.

9. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1678 (codified as amended at 42 U.S.C. § 7409(Supp. II 1990)). The Act specifies primary standards which allow for an adequate margin of safety to protect public health and secondary standards that will protect the public welfare from known or anticipated adverse effects of the criteria pollutants in the ambient air. These federal standards represented a departure from the previous states' rights approach to the air pollution problems which had generally been thought of as regional or local problems.

10. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1678 (codified as amended at 42 U.S.C. § 7410(Supp. II 1990)). Emission controls developed by the states are set forth in state implementation plans (SIPs) which ensure the ambient air quality standards will be met and ultimately need EPA approval.

11. 42 U.S.C. § 7412 (Supp. II 1990). Section 7411(a)(3) defines "stationary source" as "[a]ny building, structure, facility, or installation which emits or may emit any air pollutant."

mortality or an increase in serious irreversible, or incapacitating reversible, illness."¹² The hazardous air pollutant program contained in section 112 of the Clean Air Act, hereinafter called the air toxics program, was designed, in conjunction with other sections of the Act, to create a highly protective net for public health.¹³ A more detailed discussion of the development of section 112 presents a helpful perspective when analyzing EPA's action, or lack thereof, that is discussed later in this paper.¹⁴

The Clean Air Act passed in 1970, although thoroughly debated, was in today's terminology the "politically correct" course of action at that time. The Earth Day activities, as well as negative publicity generated by environmental group studies,¹⁵ forced the politicians' hands and created momentum for clean air, and other environmental legislation. The Nadar

12. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1678 (codified as amended at 42 U.S.C. § 7412(a)(1)(Supp. II 1990)). Hazardous air pollutants are generally characterized as having more severe health effects than criteria pollutants. The addition of the language "may cause" was a compromise for the more definitive "causes or will cause" language originally proposed in the Senate version of the Act.

13. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1678 (codified as amended at 42 U.S.C. § 7412 (Supp. II 1990)). Emission levels for hazardous pollutants provide "an ample margin of safety, to protect the public health. . . ."

14. See notes 15 through 30 and accompanying text *infra*.

15. JOHN C. ESPOSITO, *VANISHING AIR* (1970). This book was a compilation of Ralph Nadar's study group report on air pollution. Mr. Nadar wrote the forward to the book which compares pollution to warfare on the American people.

report was particularly critical of Senator Edmund Muskie, D-ME, and the leadership role he held as chairman of the Senate Subcommittee on Air and Water Pollution.¹⁶ The Nixon administration was first to jump on the bandwagon and introduce clean air legislation, but Senator Muskie's subcommittee quickly pushed through their own version which received unanimous support in the Senate.¹⁷ The House bill, which closely mirrored the Administration's proposal was overwhelmingly passed,¹⁸ but this bill had no provision specifically dealing with air toxics. The Senate version of the Clean Air Act had a specific section on air toxics. It contained procedures for the listing of air toxics and timetables within which the listed pollutants must be regulated. These non-discretionary duties were designed to force the agency to act.¹⁹ Failure to act might subject the agency to a citizen suit.²⁰ The Senate version also contained a fairly

16. *Id.* at viii, 269-278, 286-294.

17. *Id.* at 291. "[t]he air pollution issue became vital again when it appeared that the President might steal the Senator's (Edmund Muskie) thunder on a good political issue." [emphasis added]. See J. DAVIES & B. DAVIES, *THE POLITICS OF POLLUTION* 55 (1975) and S. 4358, 91st Cong., 2d Sess. (1970).

18. H.R. 17255, 91st Cong., 2d Sess. (1970). The bill passed by a vote of 374 to 1.

19. Graham, *The Failure of Agency Forcing: The Regulation of Airborne Carcinogens Under Section 112 of the Clean Air Act*, 1985 DUKE L. J. 100, 106 (1985).

20. Clean Air Act Amendments of 1970, Pub. L. 91-604, sec. 12(a), § 304(a), 84 Stat. 1676, 1706 (codified as amended at 42 U.S.C. § 7604(a)(1)(Supp. II 1990)). The EPA Administrator may be sued for any failure to perform a non-discretionary duty. This was the first provision of its kind in an environmental
(continued...)

narrow definition of hazardous air pollutants, and the Senate committee reports indicate that this section would cover only a limited number of pollutants.²¹ The Senate version anticipated that pollutants not meeting the narrow definition of hazardous, but that still posed a danger to the public, would be covered by other sections of the proposed Clean Air Act.²² Under the Senate bill, once a pollutant was listed as hazardous the Administrator²³ was required to set emission standards that would protect the public, and prohibit emissions when a safe level of exposure was not possible. A decision to prohibit a listed pollutant was arguably to be based solely on health considerations since no mention of other factors was expressly

20. (...continued)
statute. See generally, Buente, Citizen Suits and the Clean Air Act Amendments of 1990: Closing the Enforcement Loop, 21 ENVTL. L. 2233 (1991).

21. S. REP. NO. 1196, 91st Cong., 2d Sess. 20 (1970), reprinted in 1 CONGRESSIONAL RESEARCH SERVICE, FOR THE SENATE COMM. ON PUBLIC WORKS, 93d Cong., 2nd Sess., A LEGISLATIVE HISTORY OF THE CLEAN AIR ACT AMENDMENTS OF 1970, 420, 496 (Comm. Print 1974). The Senate's definition of hazardous pollutants was those "whose presence chronically or intermittently, in trace concentrations in the ambient air, either alone or in combination with other agents, causes or will cause, or contribute to, an increase in serious irreversible or incapacitating reversible damage to health." The committee report specifically discussed asbestos, cadmium and mercury as potential hazardous pollutants.

22. *Id.* Section 114 of the proposed Senate bill would have regulated these residual pollutants when the Administrator was convinced by a preponderance of the evidence that the pollutant was not hazardous.

23. See, Message of the President, 35 Fed. Reg. 15,623 (1970). This message contained the reorganization plan that created the Environmental Protection Agency. Any references in the Senate bill to the Secretary of Health, Education and Welfare were subsequently changed to the Administrator.

made or implied.²⁴ Furthermore, Senator Muskie's comments during the conference report debate are often cited for the position that health factors alone are to be used in setting the air toxic emission standards.²⁵

The House Resolution had no specific section dedicated to air toxics. However, it did attempt to regulate hazardous pollutants as part of a new source program. When there was substantial danger to public health the Administrator was required to regulate the responsible pollutants, but only as to new sources of emissions. Unlike the Senate bill, the House bill specifically allowed for the consideration of technological and economic factors, in addition to health based considerations, in establishing the emission standards.²⁶

A conference compromise between the House and Senate version resulted in the final Act, in particular section 112, covering air toxics. The final bill more closely followed the version proposed by the Senate, but with several major changes. The law, as enacted, was a health based statute that applied to existing

24. S. 4385, 91st Cong., 2d Sess. section 115, 116 CONG. REC. 32,375 (1970).

25. 116 CONG. REC. 42,385 (1970). "The standards must be set to provide an ample margin of safety to protect public health. This could mean, effectively, that a plant would be required to close because of the absence of control techniques. It could include emission standards which allowed for no measurable emissions." See generally, Goldberg, Toward Sensible Regulation of Hazardous Air Pollutants Under Section 112 of the Clean Air Act, 63 N.Y.U. L. REV. 622-623 (1988).

26. H. R. CONF. REP. NO. 1783, 91st Cong., 2d Sess. (1970), reprinted in 1970 U.S.C.C.A.N. 5356, 5374.

sources of emissions as well as new sources. The broad discretionary authority for EPA to grant exemptions contained in the original House version was deleted in the final bill, and very restrictive exemption²⁷ were inserted instead. The House language mandating consideration of technological and economic factors in setting emission standards was removed from the final version, as was the Senate's automatic prohibition of hazardous emissions, which played an important role in later court challenges involving regulation of air toxics.²⁸

It is very interesting to note that the Nixon administration tried unsuccessfully to scuttle a dedicated air toxics program during the negotiations between the House and Senate.²⁹ The administration's position, argued by the Secretary of Health, Education and Welfare, supported the House position that other sections of the Clean Air Act adequately covered toxics, and that a separate regulatory program was unnecessary.³⁰ However, the

27. H. R. REP. No. 1146, 91st Cong., 2d Sess. (1970), reprinted in 1970 U.S.C.C.A.N. 5356. The exemptions enacted were: (1) A 90 day delay before emission standards applied to existing sources; (2) possible grants of a 2 year waiver for existing sources; and (3) a 2 year waiver where the President justifies a national security need.

28. See notes 38 through 66 and accompanying text *infra*.

29. Graham, *supra* note 19, at 106.

30. 116 CONG., REC. 42,389 (1970). Nov 17, 1970 letter from Elliot Richardson to conferees advocating the administration position. See also U.S. ENVIRONMENTAL PROTECTION AGENCY, THE AIR TOXICS PROBLEM IN THE U.S.: AN ANALYSIS OF CANCER RISKS FOR SELECTED POLLUTANTS 87-89(1985). EPA studies show that indirect control of toxics as a result of the criteria pollutant program exceeds the impact of the air toxic regulations themselves.

administration's position was rejected and section 112 became part of the 1970 Clean Air legislation.

B. EARLY IMPLEMENTATION OF THE TOXICS PROGRAM

The toxic pollutants expected to be listed under section 112 were generally thought of as having more potential for serious health effects than criteria pollutants. The regulatory scheme established by Congress for these pollutants was fairly simplistic. Pollutants deemed to be hazardous were listed³¹ and then uniform emission standards were developed.³² Once a toxic was listed the Administration had 180 days to propose and publish emission standards, hold a public hearing within 30 days of publication, and propose a final national emission standards for hazardous pollutants (NESHAPs) within an additional 180 days.³³ Whether to list a pollutant is based on consideration of relevant scientific data and the judgment of the Administrator.³⁴ Listing a pollutant creates a non-discretionary duty to regulate,

31. Pollutants intended for listing required publication and at a minimum an opportunity for comment.

32. Clean Air Act Amendments of 1970, Pub. L. 91-604, sec. 4(a), § 112, 84 Stat. 1685(codified as amended at 42 U.S.C. § 7412(b)(1)(Supp. II 1990)).

33. Clean Air Act Amendments of 1970, Pub. L. 91-604, sec. 4(a), § 112(b)(1)(B), 84 Stat. 1685 (codified as amended at 42 U.S.C. § 7412(e)(Supp. II 1990)).

34. The Administrator's judgment is measured against a standard the "provides an ample margin of safety to protect the public health. . . ." Clean Air Act Amendments of 1970, Pub. L. 91-604, § 4(a), 84 Stat. 1685.

and any emission standards promulgated take effect immediately for new sources and within 90 days for existing sources.³⁵

During the first six years of the air toxics program four pollutants were listed and had emission standards promulgated by EPA.³⁶ However, even though the listing of asbestos, mercury and beryllium occurred fairly quickly, it took a court order to force EPA to promulgate the final NESHAPs.³⁷ This would become a pattern in the air toxics program.

1. ASBESTOS

The regulation of asbestos is particularly significant in the early implementation of the air toxics program. It was one of the first known carcinogens to be regulated under the new law. EPA recognized that long term exposure to asbestos was responsible for a higher than normal incidence of cancer. A complete ban on emissions was considered, as was a ban on

35. Clean Air Act Amendments of 1970, Pub. L. 91-604, § 4(a), 84 Stat. 1685 (codified as amended at 42 U.S.C. § 7412(d) (10) (Supp. II 1990)).

36. Asbestos, 40 C.F.R. §§ 61.142-151 (1991); Beryllium, 40 C.F.R. § 61.32 (1991); Mercury, 40 C.F.R. § 61.52 (1991); and Vinyl Chloride 40 C.F.R. §§ 61.62-65 (1991).

37. Environmental Defense Fund v. Ruckelshaus, Civil No. 2399-72, 3 Env'tl. L. Rep. (Env'tl. L. Inst.) 20,173 (D.D.C. Jan. 29, 1973). Initial standards were proposed in December 1971 and final standards were still not promulgated at the time this case was decided. The court ordered EPA to promulgate standards within 60 days of the court order.

production and processing.³⁸ However, both options were rejected. There was no acceptable method of measuring asbestos emissions, hence, making enforcement an impossibility. Furthermore, EPA stated

"Either approach would result in the prohibition of many activities which are extremely important; moreover the available evidence relating to health hazards of asbestos does not suggest that such prohibition is necessary to protect public health."³⁹

Though EPA found risks associated with emissions of asbestos, it chose not to prohibit emissions, but to limit "[v]isible emissions with an option in some cases to use designated control equipment. . . ."⁴⁰ It is clear that EPA considered both health and economic factors in their decision to regulate emissions rather than ban the substance despite its assertion that "[t]he

38. National Emission Standards for Hazardous Air Pollutants, Asbestos, Beryllium, and Mercury, 38 Fed. Reg. 8820 (1973)[hereinafter cited as Asbestos NESHAPs].

39. *Id.* See also, Proposed Standards for Asbestos, Beryllium, and Mercury, 36 Fed. Reg. 23,239 (1971). Proposed standards specified that economic impact was considered; and Doniger, Federal Regulation of Vinyl Chloride: A short Course in the Law and Policy of Toxic Substances Control, 7 *ECOLOGY L. Q.* 497, 572, note 384 (1978). Author discusses questionable inferences in EPA's medical evidence.

40. *Id.* Asbestos NESHAPs, *supra* note 38 at 8820. In Adamo Wrecking Co. v. United States, 434 U.S. 275 (1978), the EPA took the position that work practice standards allowed by the regulations were also criminally enforceable emission standards. However, the court held that work practice standards specified for the demolition of buildings were not "emission standards," and that section 112 required specified quantitative emission limits. See also STAFF OF SENATE COMM. ON THE ENVIRONMENT AND PUBLIC WORKS, 97TH CONG., 1ST SESS., REPORT ON THE CLEAN AIR ACT IN THE COURTS 66, 67 (Comm, Print 1981), and notes 131 through 136 *infra*, and accompanying text.

standard was not based on economic considerations."⁴¹ While the environmental groups were largely responsible for forcing EPA to promulgate final standards, it is not clear why the same groups took no action to challenge EPA's failure to prohibit emissions of asbestos.⁴²

2. VINYL CHLORIDE

After asbestos, the regulation of vinyl chloride⁴³ is probably the most important action defining EPA's approach to controlling air toxics. Like asbestos, vinyl chloride was regarded by all experts as a dangerous pollutant with carcinogenic effects.⁴⁴ A Task Force established in February 1974 found that vinyl chloride, travelling by air, posed the most significant environmental problem to populations near manufacturing facilities.⁴⁵ Other data indicated approximately

41. Asbestos NESHAPs, *supra* note 38, at 573.

42. Doniger, *supra* note 39, at 573.

43. Goldberg, *supra* note 25, at 629-630. Vinyl Chloride is a raw material of the second most widely used plastic in the United States. Production processes that use this raw material put off gases that are released into the environment.

44. Proposed Standard for Vinyl Chloride, 40 Fed. Reg. 59,532 (1975). Rat, mice, and hamster studies showed vinyl chloride caused cancer in inhalation tests. The National Cancer Institute also confirmed 27 cases of liver cancer in workers exposed to vinyl chloride, and concluded that the brain and lungs were also very susceptible to tumors.

45. *Id.* See Standards for Vinyl Chloride, 41 Fed. Reg. 46,560 (1976). Studies estimated the 4.6 million people live within 5 miles of a vinyl chloride manufacturing facility.

100 million kilograms of vinyl chloride were emitted annually.⁴⁶ Proposed emission standards were promulgated in December 1975 by EPA.⁴⁷ EPA took the position that there were no safe levels of carcinogenic agents for man, and that there never would be.⁴⁸

However, EPA decided not to delay regulation pending more certain scientific data, or to interpret section 112 as requiring a complete prohibition of emissions.⁴⁹ EPA accepted the conclusion of one of its committees that "[T]he concept of 'socially acceptable risk' represents a more realistic notion."⁵⁰

EPA's interpretation that a prohibition of all emissions was not required by section 112, even though as in the case of vinyl chloride a zero emission standard would be the only way to guarantee absolute safety, was based on several

46. 40 Fed. Reg. 59,532, 59,533 (1975). See also, EPA OFFICE OF RESEARCH AND DEVELOPMENT, SCIENTIFIC AND TECHNICAL ASSESSMENT REPORT ON VINYL CHLORIDE AND POLYVINYL CHLORIDE (1975), and EPA OFFICE OF POLLUTION PREVENTION AND TOXICS, TOXICS RELEASE INVENTORY (1990). In 1990 1,135,809 pounds of vinyl chloride were emitted into the air.

47. 40 Fed. Reg. 59,532 (1975).

48. 40 Fed. Reg. 59,533. Pollutants without an apparent safe level of emissions were referred to a non-threshold pollutants. See PAUL R. PORTNEY ET AL., CURRENT ISSUES IN U.S. ENVIRONMENTAL POLICY 30-36 (1978). Author opines that there really are no such things as threshold pollutants.

49. 40 Fed. Reg. 59,533, 59, 534 (1975).

50. EPA AD HOC COMMITTEE ON THE EVALUATION OF LOW LEVELS OF ENVIRONMENTAL CHEMICAL CARCINOGENS, THE EVALUATION OF ENVIRONMENTAL CARCINOGENS (1970).

considerations.⁵¹ If EPA required zero emissions it would result in the closure of vinyl chloride producers and related industries that relied on their products.⁵² Substitutes for vinyl chloride would not generally be available for several years and may not have the same desirable characteristics as vinyl chloride, for example, non-flammability.⁵³ EPA concluded that the negatives of a complete emission prohibition were "grossly disproportionate to the benefits of removing the risk."⁵⁴ Therefore, EPA proposed emission standards requiring "emission reduction to the lowest level achievable by use of the best available control technology."⁵⁵ EPA felt that omissions in section 112 specifically allowing for consideration of cost and technological factors did not mean that Congress intended such drastic consequences in the regulation of non-threshold pollutants, and that their approach would offer the maximum degree of protection short of a complete ban.⁵⁶ In determining what the best available control technology was for a given pollutant EPA proposed a two prong approach. First, control

51. 40 Fed. Reg. 59,532, 59,534 (1975).

52. *Id.* Vinyl Chloride products were used extensively in construction materials, packaging, and the recording and credit card industries.

53. *Id.*

54. *Id.*

55. *Id.* EPA qualified this approach as applying only in those limited cases where a complete prohibition of non-threshold pollutant emissions would result in widespread industry closures.

56. *Id.*

technology was available if it was in use at one or more plants and that use was generally adaptable to other facilities.⁵⁷ Second, costs were to be considered in very limited cases where they were grossly disproportionate to the reduction in emission levels.⁵⁸ The control measures proposed were supposed to reduce emissions by approximately 95 percent without large increases in cost.⁵⁹

In the comments to the proposed NESHAP for vinyl chloride there was general agreement that vinyl chloride was hazardous and should be listed; however, there was disagreement over EPA's approach.⁶⁰ The Environmental Defense Fund advocated a ban on those vinyl chlorides that had substitutes and a phased ban on the remaining vinyl chlorides as new substitutes were developed.⁶¹ Industry wanted EPA to use a strict cost-benefit analysis. EPA rejected both of positions and chose to promulgate emission standards based on the best available control technology.⁶²

57. *Id.* at 59,536

58. *Id.* See also Doniger, *supra* note 39, at 577. The author cites an EPA Environmental Impact Statement that concluded control measures increasing the price of vinyl chloride resins over 10 percent were "grossly disproportionate."

59. 40 Fed. Reg. 59,532, 59,543-59,544 (1975).

60. 41 Fed. Reg. 46,560, 46,561 (1976).

61. *Id.*

62. *Id.* at 46,562, 46,563. The NESHAPs actually promulgated do not cover all emissions of vinyl chloride. They
(continued...)

Less than a month after the final vinyl chloride standard was promulgated, the Environmental Defense Fund (EDF) filed suit against EPA claiming that the standard did not go far enough in protecting public health.⁶³ EDF maintained relevant cancer studies had not been taken into account by the agency, and that risks from low level exposures were not given enough attention.⁶⁴ EDF also claimed that EPA had given too much consideration to economic factors, but did not argue that economic factors should not be considered at all.⁶⁵ The case was settled in February 1977 when EPA agreed to revise and strengthen the final standard.⁶⁶

C. 1977 CLEAN AIR ACT AMENDMENTS

In the early years of the air toxics program there was little regulatory activity in comparison to other sections of the Clean Air Act. Despite the snail like pace of the program the air toxics provisions of the Act were reauthorized in 1977 with

62. (...continued)
only cover certain specified source categories where emissions are most significant. These final standards were promulgated 4 months after the statutory deadline, and were amended by EPA in December 1992. See 57 Fed. Reg. 60,998(1992).

63. Environmental Defense Fund v. Train, Civil No. 76-2045 (D.C.Cir., filed Nov. 19, 1976).

64. Doniger, *supra* note 39, at 581, 582, footnotes 439-440.

65. *Id.*

66. Environmental Defense Fund v. Train, Civil No. 76-2045 (D.C.Cir., dismissed June 24, 1977). See discussion of EPA's subsequent position regarding the vinyl chloride standard *infra* at notes 125 through 144 and accompanying text.

only minor changes.⁶⁷ The 1977 amendments broadened the definition of "hazardous pollutants." Now instead of pollutants that "may cause" harm, it now included pollutants that "may reasonably be anticipated to result" in increases to mortality and illness.⁶⁸ This new language clarified that EPA did not have to wait for proof of harm before taking action, but that action could be taken if harm were only suspected.

Congress only made one other minor change to section 112 removing a previous exemption for federal stationary sources; however, they did add a new section to the Act directing EPA to study four specific pollutants to determine if they should be listed as hazardous pollutants.⁶⁹ There was Congressional concern that EPA was not aggressive enough in regulating hazardous pollutants and this new section 122 was viewed as a way to force EPA to take action.⁷⁰

67. Clean Air Act Amendments of 1977, Pub. L. 95-95, title IV, § 401(c), 91 Stat. 701, 703, 791 (codified as amended at 42 U.S.C. § 7412(a)(6) (Supp. II 1990)). See also H.R. REP. No. 294, 95th Cong., 1st Sess. 36 (1977), reprinted in 1977 U.S.C.C.A.N. 1077. The amended language was seen as away to emphasize the prevention goals of the Act in addition to the control of existing air pollution problems.

68. Clean Air Act Amendments of 1977, Pub. L. 95-95, title IV, § 401(c), 91 Stat. 701, 703, 791 (codified as amended at 42 U.S.C. § 7412(a)(6) (Supp. II 1990)).

69. Clean Air Act Amendments of 1977, Pub. L. 95-95, title I, § 120(a), 91 Stat. 720 (codified at 42 U.S.C. § 7422 (Supp. II 1990)). The four pollutants were radioactive pollutants, arsenic, cadmium, and polycyclic organic matter. EPA was given one year to conduct the necessary study.

70. H.R. REP. No. 294, 95th Cong., 1st Sess. 36 (1977), reprinted in 1977 U.S.C.C.A.N. 1077.

The inaction in relation to the air toxics program that haunted the first six years of the program also plagued the next 13 years. There was initial optimism that the liberal administration of Jimmy Carter would breathe life into the air toxics area,⁷¹ but it never happened. The only pollutants that were considered for listing as hazardous pollutants during the Carter years were the four required to be studied under the new section 122 of the 1977 Clean Air Act Amendments and benzene.⁷² Of these five pollutants only three were actually listed as hazardous pollutants,⁷³ and of those three only one final standard was proposed.⁷⁴ No final emissions standards were promulgated during this time frame.

If the EPA's progress regarding air toxics was poor during the Carter years, it was still an improvement over what was ahead under the Reagan administration. The three pollutants listed, but unregulated, by the Carter administration remained in that status until 1983. During the early Reagan years, while Ann Gorsuch Burford headed the EPA, there was no regulatory action of

71. MARK K. LANDY ET AL., THE ENVIRONMENTAL PROTECTION AGENCY: ASKING THE WRONG QUESTIONS, 39-41 (1990).

72. Addition of Benzene to List of Hazardous Air Pollutants, 42 Fed. Reg. 29,332 (1977). Benzene was listed in response to a petition by the Environmental Defense Fund. See Graham, *supra* note 19, at 112.

73. 42 Fed. Reg. 29,332 (1977), 44 Fed. Reg. 76,738 (1979), and 45 Fed. Reg. 37,886 (1980) listed benzene, radionuclides and arsenic respectively.

74. 45 Fed. Reg. 26,260 (1980), 45 Fed. Reg. 83,448 (1980), and 45 Fed. Reg. 83,952 (1980). Proposed benzene standards for different sources of emissions.

any type under the air toxics program.⁷⁵ The agency was taken to court and ordered to issue proposed standards for radionuclides⁷⁶ and arsenic.⁷⁷ Proposed standards for both toxics were issued in 1983,⁷⁸ and final standards for several arsenic source categories were promulgated in 1986 with final radionuclide standards coming on line in 1989.⁷⁹

During the first 20 years of the air toxics program eight pollutants were listed and seven of those have final emission

75. Graham, *supra* note 19 at 113, Ann Burford was replaced as Administrator by William Ruckelshaus who had been the first EPA Administrator under Nixon.

76. Sierra Club v. Gorsuch, 551 F.Supp. 785, 789 (N.D. Cal. 1982).

77. New York V. Gorsuch, 554 F. Supp. 1061, 1066 (S.D.N.Y. 1983).

78. Proposed Arsenic Standard, 48 Fed. Reg. 33,112 (1983), and Proposed Radionuclide Standard, 48 Fed. Reg. 15,076 (1983). The EPA was cited for contempt in 1984 for not promulgating final radionuclide standards. See Sierra Club v. Ruckelshaus, 602 F. Supp. 892, 900 (N.D. Cal. 1984). EPA later withdrew the proposed standard for radionuclides citing a lack of adequate technical information, 49 Fed. Reg. 43,906 (1984).

79. 51 Fed. Reg. 28,033 (1986)(emissions from arsenic trioxide and metallic arsenics production facilities); 51 Fed. Reg. 28,025 (1986)(emissions from glass manufacturing plants); 51 Fed. Reg. 28,029 (1986)(emissions from primary copper smelters); 54 Fed. Reg. 51,695 (1989)(emissions of radionuclides other than radon from DOE facilities); and 54 Fed. Reg. 51,699 (1989)(radionuclide emissions for elemental phosphorous plants). Currently several of the NESHAPs for radionuclide source categories controlled by the Nuclear Regulatory Commission have been put on hold. This was an option provided to EPA by Congress under § 112(d)(9) of the 1990 Clean Air Act Amendments. See 57 Fed. Reg. 56,877(1992) EPA issued a proposed rule in December 1992 which would allow the NRC to regulate their own licensees pursuant to the Atomic Energy Act because their regulations provide a commensurate margin of safety to public health.

standards. Moreover, the regulations covering the seven listed pollutants were further degraded when EPA limited the scope of their coverage to only a few specific sources, thereby carving the regulated piece of the pie into even smaller portions.⁸⁰

A program that was designed to deal with threatening substances in a fairly expeditious manner took from four to seven years per pollutant to promulgate emission standards.⁸¹ Further analysis of the federal air toxics program from 1970-1990 is necessary for both an understanding of the actions leading to the 1990 Clean Air Act Amendments, and to the approaches taken by the states and local agencies before and after 1990.

D. PROBLEMS AFFECTING THE FIRST 20 YEARS OF AIR TOXICS CONTROL

1. LISTING

The listing of pollutants under section 112 is within the EPA Administrator's discretion, but once a substance is listed it takes on a momentum all its own. As one commentator said, "profound regulatory implications flow from the initial decision

80. See *supra* notes 62, 74, and 79 for references to the few sources of hazardous pollutants actually regulated under the NESHAPs. See generally 40 C.F.R. part 61(1992) for all the NESHAP regulated source categories.

81. SEN. REP. NO. 228, 101st Cong., 1st Sess., 131 (1989). In comparison to the federal air toxics program a handful of states had emission standards for approximately 708 substances over the same period of time. *Id.*

to list a pollutant as hazardous."⁸² Unrealistic statutory deadlines⁸³ and non-discretionary duties place pressure on EPA to act in a timely manner. Therefore, EPA has been extremely cautious and reluctant to list substances. Because of the ramifications of listing, EPA developed a complicated bureaucratic morass to deal with the decision of whether or not to list a pollutant. EPA developed a five step internal process consisting of a health assessment document prepared by the EPA staff,⁸⁴ a review and approval by the Scientific Advisory Board, and finally approval from the Administrator.⁸⁵ The listing of a substance has the potential to severely affect industry; consequently, EPA evaluates as many potential health effects for

82. Graham, *supra* note 19, at 116. See also Natural Resources Defense Council v. Thomas, 885 F 2d 1067(2d Cir. 1989). NRDC brought an action to compel EPA to list certain metals and organic chemicals, but the court found it had no jurisdiction to compel purely discretionary duties.

83. See Dwyer, *The Pathology of Symbolic Legislation*, 17 *Ecology L. Q.* 233, 277-281 (1990). Deadlines set by Congress are unrealistic and create a negative domino effect throughout the EPA and all of the programs it administers. Non-discretionary duties that can't be completed in time subject the agency to litigation. Litigation forces a shifting of resources that cause further delay; consequently, making other statutory deadlines unobtainable.

84. See COMPTROLLER GEN. OF THE U.S., *DELAYS IN EPA'S REGULATION OF HAZARDOUS AIR POLLUTANTS* 3-4 (1983)[hereinafter HAP Report]. Health assessments consist of a pollution identification by the Office of Air Quality Planning and Standards (OAQPS), and an extensive health assessment by the Office of Health and Environmental Assessment, and finally an exposure assessment by OAQPS.

85. *Id.* at 8-24. Report discusses the roles of all the players in EPA's listing process.

each contemplated listing as possible.⁸⁶ This expanded approach delays the process and uses a large percentage of the limited EPA resource pool.⁸⁷ To hasten the listing process EPA proposed a generic listing policy in 1979,⁸⁸ but this policy was never finalized, and EPA continued to fully examine each pollutant separately.⁸⁹ This convoluted process may add credibility to EPA's decision to list, but it defeated the purpose of section 122, which was to protect the public from hazardous substances. The preventative nature of the air toxics program directly conflicts with EPA's desire to be 100 percent certain.

2. THE UNCERTAINTY OF SCIENTIFIC DATA

The lack of certainty about the effects of pollutants puts EPA in a position of either under regulating or not regulating air toxics. Other factors, discussed above, play a role, but not to the extent of inadequate or inconclusive scientific

86. HAP Report, *supra* note 84, at 5. Report states, "[s]ince EPA listed and regulated several substances in the early 1970s, industry resistance to regulation has grown so intense that EPA believes it must develop the best health case it can to avoid future legal action."

87. Graham, *supra* note 19, at 117.

88. Policy and Procedures for Identifying, Assessing, and Regulating Airborne Substances Posing a Risk of Cancer, 44 Fed. Reg. 58,642 (1979).

89. HAP Report, *supra* note 84 at 19-20.

proof.⁹⁰ Congress enacted a law telling EPA to regulate hazardous pollutants, but gave no further guidance on how to carry out that task. Professors Henderson and Pearson refer to this method of legislating as "aspirational commands."⁹¹ Because of the vagueness of the delegated task, EPA has generally elected to chose the least controversial course of action.⁹²

Many of the hazardous pollutants that are currently regulated under section 112, and many that should be regulated, or will be regulated under the current amended act are suspected carcinogens. However, definitive scientific information about the toxic effects of these pollutants does not exist. Studies on carcinogenic effects do exist on approximately ten percent of commercially produced substances, but most of these studies do not include tests for reproductive or neurological effects.⁹³ In the few instances where health effects are understood, there exists scientific uncertainty about how much exposure over what length of time will bring about adverse health effects.⁹⁴

90. Flournoy, *Legislating Inaction: Asking the Wrong Questions in Protective Environmental Decisionmaking*, 15 HARV. ENVTL. L. REV. 327, 330 (1991).

91. Henderson and Pearson, *Implementing Federal Environmental Policies: The Limits of Aspirational Commands*, 78 COLUM. L. REV. 1429 (1978).

92. *Id.* at 1436. See generally Latin, "Significance" of Toxic Health Risks: An Essay of Legal Decisionmaking Under Uncertainty, 10 ECOLOGY L. Q. 339 (1982).

93. NATIONAL RESEARCH COUNCIL, *TOXICITY TESTING: STRATEGIES TO DETERMINE NEEDS AND PRIORITIES*, 83-90 (1984).

94. Gaines, *Science, Politics, and the Management of Toxic Risks Through Law*, 30 JURIMETRICS J. 271, 279 (1990).

Moreover, none of these studies can accurately gauge the past exposure of the test group.⁹⁵ These gaps in information make it difficult to promulgate emission standards, and they create an unregulated period while scientists wait for observable effects to surface.⁹⁶ Industrial emission sources support these types of regulatory gaps, favoring to wait for more information, but politically such gaps, especially in environmental laws, are unacceptable, and Congress often turns to EPA for the "quick fix."

Determining the effects of toxic substances on humans has progressed over the years, but the more researchers discover the more they realize how much has yet to be learned.⁹⁷ Most studies of toxic effects are conducted using animal research and then researchers try and extrapolate that data to humans.⁹⁸ This process of extrapolating data confronts many of the uncertainties discussed above. The extrapolation involves many assumptions by the researchers, some of which may be widely accepted and others that are not.⁹⁹ Attempts to standardize the data have not been

95. Flournoy, *supra* note 90 at 334. Past exposures include dietary effects, cumulative effects over the years and interactive effects among different substances in addition to other factors.

96. Gaines, *supra* note 94 at 380.

97. *Id.* at 381. Research now attempts to determine the genetic and epigenetic effects of toxics on cells, but progress is slow.

98. Flournoy, *supra* note 90 at 334.

99. *Id.*

totally successful because of conflicting statutory mandates.¹⁰⁰

The result of this uncertainty was a case by case analysis by EPA of every pollutant, regardless of whether it was a known carcinogen.¹⁰¹ Intense review of this scientific analysis became the accepted manner of business by the EPA, resulting in added costs and lengthy delays in regulation of hazardous pollutants.¹⁰² Usually the regulation of a toxics came only after there was a consensus among the scientific community. Thus, the lack of scientific certainty placed EPA in an unenviable position. While Congress may or may not have been aware of this dilemma, it asked EPA to make judgments that should have remained in the legislative realm. EPA was required to decide what risks, including those associated with scientific uncertainty, the public would be willing to accept, and then hope their decisions reflect accurate public sentiment as well as legislative intent.¹⁰³

100. FRANK B. CROSS, ENVIRONMENTALLY INDUCED CANCER AND THE LAW, 147-12 (1989). The Interagency Regulatory Liaison Group (IRLG) did propose draft guidelines in 1979 for carcinogens, but they were never consistently applied. See generally, Interagency Regulatory Liaison Work Group on Risk Assessment, Scientific Bases for Identification of Potential Carcinogens and Estimation of Risks, 63 J. NAT'L. CANCER INST. (1979). After these guidelines were promulgated, they were uniformly criticized for lack of peer review.

101. Graham, *supra* note 19, at 120.

102. *Id.* at 121.

103. Green, The Resolution of Uncertainty, 12 NAT. RESOURCES J. 182-185 (1972).

3. RISK ASSESSMENT

EPA had to develop a system of risk assessment to deal with the air toxics program and make some approximate determination of the benefits and/or adverse effects of these substances. Any choice adopted by EPA could potentially have widespread economic consequences.¹⁰⁴ The majority of EPA's work in the area of risk assessment dealt with the risk of cancer.¹⁰⁵ EPA's approach to risk assessment is best exemplified in their 1986 Guidelines for Carcinogen Risk Assessment and the methodology outlined therein.¹⁰⁶

The 1986 guidelines were a revised version of the agency's interim guidelines promulgated in 1976.¹⁰⁷ They incorporated a format similar to the one recommended by the National Research Council(NRC) in 1983.¹⁰⁸ Based on the NRC study, risk assessment was broken into four steps:

104. Marchant and Danzeisen, "Acceptable" Risk for Hazardous Air Pollutants, 13 HARV. ENVTL. L. REV. 535, 541 (1989)

105. Other guidelines for assessing health risks were promulgated by EPA. See generally Guidelines For Mutagenicity Risk Assessment, 51 Fed. Reg. 34,006 (1986); Guidelines for the Health Risk Assessment of Chemical Mixtures, 51 Fed. Reg. 34,014 (1986); Guidelines for the Health Assessment of Suspect Developmental Toxicants, 51 Fed. Reg. 34,028 (1986); and Guidelines for Estimating Exposures, 51 Fed. Reg. 34,042 (1986).

106. 51 Fed. Reg. 33,992 (1986)[hereinafter Guidelines].

107. Interim Procedures and Guidelines, Health Risks and Economic Impact Assessments of Suspected Carcinogens, 41 Fed. Reg. 21,402 (1976).

108. NATIONAL RESEARCH COUNCIL, RISK ASSESSMENT IN THE FEDERAL GOVERNMENT: MANAGING THE PROCESS (1983).

- (1) hazard identification - a qualitative (weight of the evidence) assessment of relevant biological and chemical information to determine if it poses a risk to humans;
- (2) dose-response - a quantitative assessment measuring the relationship between amounts of exposure and the resulting, if any, adverse effects;
- (3) exposure assessment - a quantitative estimate comparing the actual population exposed to given substances and the exposure profiles of those same people. Profiles include duration of exposure, concentration, and frequency; and
- (4) risk characterization - a summary of the above three steps as well as a health risk estimate. The risk estimate includes a discussion of scientific uncertainties associated with the risk.¹⁰⁹

The weight of the evidence standard used in the hazard identification step has spawned a five category classification scheme.¹¹⁰ Pollutants are placed in groups A through E. Group A is the most carcinogenic and Group E has no evidence of carcinogenicity. Human and animal studies form the basis for this classification scheme.¹¹¹ The dose-response assessments are

109. Guidelines, *supra* note 106, at 33,993-34,001.

110. Guidelines, *supra* note 106, at 34,000. See also Sawey et al., The Potential Health Benefits of Controlling Hazardous Air Pollutants, 1 VILL. ENVTL. L. J. 473, 479 (1990), and EDWARD J. CALABRESE AND ELAINA M. KENYON, AIR TOXICS AND RISK ASSESSMENT 46-49 (1991). This classification scheme was a hybrid of one used by the International Agency for Research on Cancer.

111. Guidelines, *supra* note 106, at 33,996.

likewise based on human and animal studies, but EPA has expressed a preference for human (epidemiological) data; however, human data is scarce, so animal studies are most often used.¹¹² Animal study data is extrapolated to humans, generally using a linearized multistage model, which is considered a conservative model.¹¹³ Under the exposure assessment step of the risk assessment, EPA measures human exposure to pollutants assuming continuous ambient exposure over a 70 year lifespan, and quantifies the population exposed using a Human Exposure Model (HEM).¹¹⁴ The results from the hazard classification, the dose-response studies and the HEM are analyzed and then scientific uncertainties are added to the equation to determine the overall risk characterization.¹¹⁵

Once the risk has been characterized EPA must determine how to manage that risk, or in other words, they must make a judgment regarding the risk that will be acceptable. EPA's policy is set forth in one of the final NESHAPs for benzene¹¹⁶ that was promulgated in response to the vinyl chloride litigation

112. Sawey, *supra* note 110, at 479.

113. Guidelines, *supra* note 106, at 33,997, 33,998. Animal studies are usually conducted using very high dose levels. These high dose levels are extrapolated in a straight linear method to simulate low doses for humans and then estimate their responses.

114. Sawey, *supra* note 110, at 480. The HEM collects data within a 50 kilometer radius of the emitting source, and then includes meteorological and dispersion data as well as census information on the population within the study area.

115. Guidelines, *supra* note 106, at 33,999.

116. 54 Fed. Reg. 38,004 (1989).

discussed in the next section of this paper.¹¹⁷ EPA developed a two step approach to determine acceptable risk.¹¹⁸ The first step is analytical and considers all the risk data, including uncertainty estimates. It presumes the risk to an individual exposed to maximum levels over their lifetime is 1 in 10,000 (10^{-4}),¹¹⁹ and then uses that risk level as a starting point for the second part of the analysis to determine acceptability. The second step sets the actual emission standard after consideration of all the health factors considered in the first step, and also adds information on costs and technological feasibility.¹²⁰ The level of emissions ultimately allowed provides an "ample margin of safety," and affords protection equal to or greater than 1 in a million (10^{-6}).¹²¹

This risk assessment methodology is not exact; risk assessment is in its intellectual infancy.¹²² EPA understands that risk assessment is evolving and has tried to "encourage

117. Natural Resources Defense Council v. EPA, 824 F. 2d 1146 (D.C.Cir. 1987).

118. 54 Fed. Reg. 38,045 (1989).

119. *Id.* The risk to a person living near an emitting facility who is exposed to maximum pollutant concentrations over an average lifetime (70 years) is referred to as the maximum individual risk (MIR).

120. *Id.*

121. *Id.* See also Marchant and Danzeisen, *supra* note 104, at 548-558 for a discussion of the EPA's risk management approach during its developmental phase.

122. Sawey, *supra* note 110, at 479. The authors mention a whole new consulting industry that has grown to handle the risk assessment business.

research and analysis that will lead to new risk assessment methods and data."¹²³ However, until new techniques are developed, the current methods will be used to provide estimates of the upper bounds of risk.¹²⁴ The risk management approach will play an important role in regulation under the 1990 Clean Air Act Amendments and will likely be relied on by the states in their own toxic programs. Given the stakes involved in the "acceptable risk" determinations, it is a safe bet that the courts will soon be involved in this controversial area.¹²⁵

E. VINYL CHLORIDE DECISION

The *Vinyl Chloride* case¹²⁶ is important in the evolution of air toxics because it brought to a head all the years of footdragging by the agency and directly challenged what many experts and commentators believed to be a strained interpretation

123. Guidelines, *supra* note 106, at 33,992. See also 54 Fed. Reg. 16,403(1989), which contains a public report on workshops to revise the 1986 standards, and U.S. ENVIRONMENTAL PROTECTION AGENCY, WORKSHOP REPORT ON EPA GUIDELINES FOR CARCINOGEN RISK ASSESSMENT: USE OF HUMAN EVIDENCE (1989).

124. 42 U.S.C. § 7412(a)(11)(Supp. II 1990). See generally Cross, *supra* note 100.

125. Marchant and Danzeisen, *supra* note 104, at 558. The outcome of risk determinations and decisions about how best to manage that risk could mean life or death for industries emitting regulated air toxics.

126. Natural Resources Defense Council v. EPA, 824 F. 2d 1146 (D.C.Cir. 1987).

of the Congressional mandate under section 112.¹²⁷ As discussed earlier the Environmental Defense Fund had attacked EPA's emission standards for vinyl chloride claiming the standards were not stringent enough.¹²⁸ EDF's challenge was settled out of court when EPA agreed to make the standards stronger, and eventually promulgated new proposed emission standards.¹²⁹ These proposed standards were never finalized, and EPA later renegeed on its agreement with EDF and withdrew the more stringent proposed standards altogether.¹³⁰ Consequently, the Natural Resource Defense Council (NRDC) filed suit challenging EPA's action.

NRDC's challenge is important because it directly confronted EPA's interpretation of section 112 allowing for consideration of technological and economic factors in setting emission standards for non-threshold pollutants.¹³¹ The previous EDF challenge

127. See generally Doniger, *supra* note 39; Goldberg, *supra* note 25, at 626, 635; Marchant and Danzeisen, *supra* note 104, at 538, 539; Dwyer, *supra* note 83, at 269; Coppede, The Clean Air Act; Economics and Technological Feasibility in Setting Standards Under Section 112, 22 LAND & WATER L. REV. 397 (1987); and Danker, Safety Before Feasibility: A Two-Step Approach to Regulating Hazardous Air Pollutants, 56 GEO. WASH. L. REV. 799 (1988).

128. Environmental Defense Fund v. Train, Civil No. 76-2045(D.C.Cir. 1976).

129. 42 Fed. Reg. 28,154 (1977).

130. 50 Fed. Reg. 1182 (1985). EPA made only minor changes to the original standards promulgated in 1976 and planned to use these as the final standards.

131. Natural Resource Defense Council v. EPA, 824 F. 2d 1146 (D.C.Cir. 1987).

only claimed that emission standards were inadequate,¹³² and the *Adamo Wrecking Co. v U.S.* case¹³³ challenged the use of work practices as criminally enforceable emission standards.¹³⁴ Though, *Adamo* was a criminal enforcement case, it appears the court assumed that section 112 did not require a zero-emission standard for asbestos. Justice Stevens in his dissenting opinion accepted EPA's statement regarding the known carcinogen asbestos "that in order to provide an ample margin of safety to protect public health . . . it is not necessary to prohibit all emissions."¹³⁵ The NRDC's contentions were 180 degrees from EPA's position. They claimed that section 112 emission standards should be based exclusively on health related factors, and that non-threshold carcinogens required the Administrator to prohibit all emissions.¹³⁶

So, the primary issue in *NRDC v. EPA* was whether the Administrator was required to set a "zero-risk" emission standard for non-threshold pollutants, even if such action would create

132. Environmental Defense Fund v. Train, Civil No. 76-2045 (D.C.Cir. 1976).

133. 434 U.S. 275 (1978).

134. Following the *Adamo* decision section 112 was amended to specifically allow for the use of work practices and operational standards as enforceable "emission standards" when quantitative standards were not feasible. Pub. L. 95-623, § 13(b), 92 Stat. 3458 (codified as amended at 42 U.S.C. § 7412(h) (Supp. II 1990)).

135. 434 U.S. 275, 299 (1978).

136. Natural Resource Defense Council v. EPA, 824 F. 2d 1146, 1147 (D.C. Cir. 1987).

little, if any, real benefits, but might drive industries out of business.¹³⁷ If a "zero-risk" standard was not required, to what degree could the Administrator consider technological and cost factors?¹³⁸

The court did not accept NRDC's argument in favor of a "zero risk" standard, and found it unreasonable "to conclude that, without even discussing the matter, Congress mandated massive economic and social dislocations by shutting down entire industries."¹³⁹ The court went on to establish a two-step procedure for developing emission standards under section 112.¹⁴⁰ Initially EPA must use a health only approach to determine what is a safe or acceptable level of risk.¹⁴¹ Next the Administrator must decide whether proposed emission standards will provide an "ample margin of safety," as specified in section 112.¹⁴² The court stated "[T]his language permits the Administrator to take into account scientific uncertainty and to

137. *Id.* at 1152.

138. *Id.* at 1151.

139. *Id.* at 1154. NRDC contended that Congress had impliedly discussed the matter and cited comments made by Senator Muskie during a Senate conference.

140. See Danker, *supra* note 127, at 811. "Then the court abruptly ceases its role as a reviewing body and transforms itself into a "mini-legislature" by dictating a two-step process for setting standards under the statute."

141. Natural Resource Defense Council v. EPA, 824 F. 2d 1146, 1164 (D.C.Cir. 1987). "[t]he Administrator's decision does not require a finding that "safe" means "risk free" . . . or a finding that the determination is free from uncertainty."

142. *Id.* at 1165.

use expert discretion to determine what action should be taken in light of that uncertainty."¹⁴³ Moreover, cost and technological feasibility could be considered in the second step. What constituted "safe" and an "ample margin of safety" was not defined by the court, but was left to the discretion of the EPA administrator.¹⁴⁴

While not totally accepting of EPA's statutory interpretation, the *NRDC v. EPA* decision did lend credence to the limited use of cost and technology factors, but not as part of primary health based standards. Congressional intent was clearly ambiguous, as evidenced by the court's independent analysis and approach to section 112. Several commentators concluded that ambiguities in the statute, as well as opportunities for EPA to circumvent the court's two-step approach, would make section 112 unenforceable, or lead to either further judicial intervention, or an overhaul of the entire section 112 statutory framework.¹⁴⁵

III. 1990 CLEAN AIR ACT AMENDMENTS

A. BACKGROUND

The 1977 Clean Air Act Amendments only slightly modified

143. *Id.*

144. *Id.* at 1166.

145. See Brownell, et al., Vinyl Chloride: An Opportunity for Rational Decision Making, 4 NAT. RESOURCES AND ENV'T. 26, 55 (1989), and Goldberg, *supra* note 25, at 635.

section 112, but Congressional displeasure over the slow pace of regulation increased the oversight given to the air toxics program.¹⁴⁶ However, proposed legislation that would have made the air toxics program more formidable was held up in various House and Senate committees.¹⁴⁷ Proposed legislation would have ordered EPA to consider listing specified pollutants, and would have automatically listed the pollutants if EPA failed to act within the allotted statutory time.¹⁴⁸ Other proposals would have simply listed the chemicals for EPA.¹⁴⁹ While the slow pace of EPA's listing process seemed to be the early focus of proposed legislation, other committee bills went so far as to approve the use of the best available technology (BAT) standard EPA had been using in setting emission standards for non-threshold pollutants. However, these attempts to incorporate the BAT standard did not do away with the original health-based

146. Dwyer, *supra* note 83, at 288, 289. This article details the specifics of Congressional oversight including the role of committee functions, such as investigative and appropriation powers.

147. Waxman, *An Overview of the Clean Air Act Amendments of 1990*, 21 ENVTL. L. 1721, 1722 (footnote 24) (1991). Representative Waxman details further legislative attempts to amend the air toxics program between 1983 and 1986.

148. *Clean Air Act Reauthorization (Part 1): Hearing on H.R. 5084 Before the Subcommittee on Health and the Environment of the Committee on Energy and Commerce, 98th Cong., 2d Sess.* 34-41 (1984).

149. *Toxic Release Control Act of 1985; Hearings Before the Subcommittee on Health and the Environment of the House Committee on Energy and Commerce, 99th Cong., 1st Sess.* 29 (1985). Proposed legislation would have listed 85 hazardous pollutants for EPA to regulate.

standards of the air toxics program.¹⁵⁰ None of these proposals made it out of committee.

The proposed amendments to the air toxics program were not the stumbling block to new clean air legislation. Other provisions on acid rain created the major differences that kept Congress from reaching agreement.¹⁵¹ Meanwhile the Reagan administration was cutting both the staff and budget of the air toxics program making it almost totally ineffective. A June 1985 policy initiated by the administration to introduce a new air toxic strategy and shift more responsibility to the states was accompanied by little federal guidance and even less financial support.¹⁵² While Congressional inability to amend the Clean

150. See S. REP. No. 666, 97th Cong., 2d Sess. 134 (1982) (BAT was the approved standard in this proposed legislation, but health based standards were to be used in cases where BAT was not protective enough); and S. REP. No. 426, 98th Cong., 2d Sess. 140 (1984).

151. Dwyer, *supra* note 83, at 266. Political pressure by those opposing acid rain legislation effectively blocked all attempts to amend the air toxics program. The conflicting agendas stopped needed changes that a consensus agreed were necessary.

152. S. REP. No. 231, 100th Cong., 1st Sess. 193-194 (1987). The 1985 policy contained the following five initiatives:

- (1) expand the scope of the program to include multiple pollutants from source categories;
- (2) concentrate on specific communities with air toxic problems;
- (3) increase support to the States;
- (4) improve emergency preparedness and response for accidental releases; and
- (5) start new efforts to provide more information to the public on the air toxics problem.

See also Wooley, A "Kinder, Gentler" Air Toxics Policy, 4 NAT. (continued...)

Air Act continued, the policy of "passive neglect" regarding the air toxics program also continued.¹⁵³

Congressional infighting may have stopped the passage of new clean air legislation, but outside events kept public attention focused on the problems of air toxics. In December 1984 the leak of toxic substances from a Union Carbide plant in Bhopal, India killed over 2500 people and permanently disabled over 100,000 more.¹⁵⁴ Eight months later a leak at Union Carbide's plant in Institute, West Virginia injured 135 people and brought the problem home to the American people.¹⁵⁵ Criticism of the air toxics program intensified as did activity to better quantify and understand the scope of air toxic emissions in the United States.¹⁵⁶ Experts related that exposure to toxics via the air

152. (...continued)
RESOURCES AND ENV'T. 29, 30 (1989).

153. Wooley *supra* note 152.

154. See McFadden, *India Disaster: Chronicle of a Nightmare*, N.Y. TIMES, Dec. 10, 1984, at A1, col. 1. A rupture in a storage tank released over 60,000 pounds of methyl isocyanate into the air.

155. Brown, *supra* note 7, at 224-225. The West Virginia accident occurred on Aug. 11, 1985.

156. *Release of Poison Gases and Other Hazardous Air Pollutants From Chemical Plants: Hearing Before the Subcommittee on Health and the Environment and Subcommittee on Commerce, Transportation, and Tourism of the House Committee on Energy and Commerce, 99th Cong., 1st Sess. (1985)*. See also *Bhopal Tragedy Prompts Scrutiny by Congress*, 42 CONG. Q. WEEKLY 3147 (1984).

are far greater than by water or other methods.¹⁵⁷ An informal survey conducted by the Subcommittee on Health and the Environment in 1985 disclosed over 80 million pounds of toxic emissions.¹⁵⁸ When Superfund legislation came up for reauthorization in late 1985 Congress added provisions requiring companies to report the amounts of toxic chemicals they released.¹⁵⁹ When the results of the first annual survey were released in 1989 the total emissions reported were far more than had been anticipated.¹⁶⁰

B. TOXIC RELEASE INVENTORY

The survey of toxics ordered by the Superfund amendments was called the Toxic Release Inventory (TRI). The results of the 1987 survey were released by EPA in June 1989.¹⁶¹ The TRI collected information from over 19,000 manufacturing facilities

157. U.S. ENVIRONMENTAL PROTECTION AGENCY, THE AIR TOXICS PROBLEM IN THE U.S.; AN ANALYSIS OF CANCER RISKS FOR SELECTED POLLUTANTS (1985). People drink about 2 liters of water per day in comparison to breathing about 15,000-20,000 liters of air per day.

158. Waxman, *supra* note 147, at 1730. The subcommittee survey was incomplete since companies were not compelled to provide information.

159. Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-'99, Title III, 100 Stat. 1613, 1728-1758 (codified at 42 U.S.C. §§ 11,001-11,050 (1988 & Supp. II 1990)). This section of the Superfund Amendments is called the Emergency Planning and Community Right-To-Know Act of 1986.

160. Shabecoff, U.S. Calls Poisoning of Air Far Worse Than Expected and Threat to Public, N.Y. TIMES, Mar. 23, 1989, at B11, col. 1.

161. U.S. ENVIRONMENTAL PROTECTION AGENCY, THE TOXICS RELEASE INVENTORY (1989).

covering releases of 328 chemicals.¹⁶² A total of 2.7 billion pounds of air emissions were reported for the year 1987.¹⁶³ This total includes releases from point sources and fugitive emissions,¹⁶⁴ and is based on measurements, calculations, published emission factors, and other methods.¹⁶⁵ In the forward to the TRI, William Reilly, the EPA Administrator, stated:

"The information in this National Report will no doubt raise concern about toxic releases. This is exactly what it is meant to do. Informed about toxic chemicals, citizens can play an important role in helping their communities achieve tangible results in protecting public health and the environment."¹⁶⁶

Mr. Reilly was right about the TRI raising concern. Representative Henry Waxman of California is quoted as saying "[T]he magnitude of the problem far exceeds our worst fears," and even a leading chemical industry representative said, "[I]t is apparent that the current approach to air toxics isn't doing the

162. *Id.* at 1-2.

163. *Id.* at 109. The TRI also reports the releases of chemicals to land and water. See also GENERAL ACCOUNTING OFFICE REPORT, TOXIC CHEMICALS, EPA'S TOXIC RELEASE INVENTORY IS USEFUL BUT CAN BE IMPROVED, 3 (June 1991), which criticizes the TRI because it does not include emissions data from non-manufacturers and federal facilities. It also points out that over 10,000 facilities failed to meet their TRI reporting requirements.

164. *Id.* Point sources are discrete, such as smokestacks or vents, and fugitive sources are not readily identifiable, such as evaporative losses and leaks.

165. *Id.* at 126. Nearly 30 percent of the total air emissions were based on the calculations method.

166. *Id.* at vii.

job."¹⁶⁷ Many believed, including Representative Waxman, that with the tragedy of several major accidents still in the headlines Congress would finally pass new clean air legislation in 1987-1988.¹⁶⁸ However, proposed legislation in 1988 again failed to pass because of conflicts over acid rain measures, the scope of the prevention of significant deterioration program (PSD), and election year jitters.¹⁶⁹

The release of the TRI in 1989 and the election of George Bush created an optimistic climate that there would finally be a breakthrough in the clean air legislative stalemate.¹⁷⁰ New legislation was introduced in the House on non-attainment, acid rain, and the air toxics program.¹⁷¹ Public interest and press coverage increased when the Bush administration released its own

167. Shabecoff, *supra* note 160. Mr. Jeffrey C. Van was spokesman for the Chemical Manufacturers Association (CMA), the leading trade organization for the chemical industry. See also Kriz, Politics in the Air, NATIONAL JOURNAL, May 6, 1989, at 1098-1102. This position by CMA represented a significant reversal of its long standing opposition to changes in the air toxics program.

168. Waxman, *supra* note 147, at 1731. In addition, sanctions for failure to attain the National Ambient Air Quality Standards were set to go into effect, and states and urban areas were pressuring Congress to take action. However, Congress extended the attainment deadlines by 2 years, choosing only to deal with the immediate problem rather than create the mechanism for a long term solution.

169. Lester, A New Federalism? Environmental Policy in the States, in ENVIRONMENTAL POLICY IN THE 1990s, TOWARD A NEW AGENDA 112-113 (Norman J. Vig and Michael E. Kraft ed., 1990).

170. *Id.*

171. See H.R. 2323, 101st Cong., 1st Sess. (1989); H.R. 1470, 101st Cong., 1st Sess. (1989); and H.R. 2585, 101st Cong., 1st Sess. (1989), respectively.

new clean air legislation in July, 1989.¹⁷² Over the next several months many compromises were reached on some of the provisions that proved so troublesome in the past.¹⁷³ While many had hoped the new legislation would pass in 1989, further conference wrangling and strong floor debate in the Senate held up the amendments until 1990.¹⁷⁴ The final bill passed the House on October 26, 1990 and the Senate the following day. President Bush signed it into law on November 15, 1990.

The Clean Air Act Amendments of 1990¹⁷⁵ added over 750 pages of additional provisions to the current law and transformed an already complicated Act into a "monster of complexity."¹⁷⁶ Although many of the old Clean Air Act programs have been rewritten and revised, and new programs added, arguably the air toxics program went through some of the most drastic changes. The 1990 amendments are designed to take the old sluggish section

172. Weisskopf, Bush Presents Clean Air Package, WASH. POST, July 22, 1989, at A5, col. 1. See also Hager, Critics Disappointed by Details of Bush Clean-Air Measure, CONGRESSIONAL QUARTERLY WEEKLY REPORT, July 22, 1989, at 1852-1853.

173. Gold, After Years of Fighting, 2 Democrats Compromise, N.Y. TIMES, Oct. 15, 1989, at 30, col. 3. This article refers to the battle between Representatives Waxman from the heavily polluted Southern California district, and Representative Dingell from the heavily industrialized district of the auto manufacturers in Michigan.

174. Waxman, *supra* note 147, at 1739-1741. The author chronologically details the conference and committee battles that led to the 1990 Clean Air Act Amendments.

175. Pub. L. No. 101-549, 104 Stat. 2399 (1990) (codified at 42 U.S.C. §§ 7401-7671q(Supp. II 1990)).

176. JOHN QUARLES AND WILLIAM H. LEWIS, JR., THE NEW CLEAN AIR ACT, at v. (1990).

112 and establish an aggressive new air toxics program.¹⁷⁷

C. LISTING OF POLLUTANTS

The amended section 112 takes away most of EPA's discretionary power to determine the pollutants to be listed as hazardous.¹⁷⁸ By listing 189 substances to be regulated, Congress answered one of the major complaints concerning EPA's lack of responsiveness under the old section 112,¹⁷⁹ and forced the agency to act. However, this list of 189 substances is not etched in stone. EPA has authority to either delete or add pollutants, if scientific evidence so warrants.¹⁸⁰

177. Waxman, *supra* note 147, at 1774.

178. 42 U.S.C. § 7412(b)(1)(Supp. II 1990). Most substances are listed with a Chemical Abstract Service (CAS) number and are specifically defined, but those listed without a CAS number include unique chemical substances that contain the listed chemical as part of their own molecular infrastructure. For example, fine mineral fibers would include emissions from glass manufacturing and processing facilities. See also S. REP. No. 228, 101st Cong., 1st Sess. 160(1989)[hereinafter Senate] which identifies 3 sources for the listed substances; (1) Substances listed under the Emergency Planning and Community Right-To-Know Act of 1987; (2) high priority contaminants listed by the Agency for Toxic Substances and Disease Registry (ATSDR); and (3) those pollutants regulated by a least one state or locality with established acceptable emission standards. Additionally, listing under section 112 automatically lists these hazardous pollutants under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601(14)(1988 & Supp. II 1990), and subjects reportable quantity releases to CERCLA reporting requirements.

179. 42 U.S.C. § 7412(b)(1)(Supp. II 1990). See also Pub. L. 102-187, 105 Stat. 1285 (1991) which corrected an inadvertent mistake in the original listing by deleting "7783064 Hydrogen Sulfide." This brought the total to 189 as intended.

180. 42 U.S.C. § 7412(b)(2)(Supp. II 1990).

Additionally, any person may petition EPA to modify the list, and the Administrator has 18 months to either grant or deny the petition.¹⁸¹ Petitions to revise the hazardous pollutant list will probably meet the same type of resistance that was present under the old law.¹⁸²

The change in the listing procedures under section 112 reflects the first step in the most significant change in the approach to the problem of air toxics. No longer will EPA use a health-based approach to examine individual pollutants. EPA will now use a technology-based approach and primarily focus on the maximum control of total source emissions.¹⁸³ Congress finally rescinded its broad delegation, or non-delegation as some claim, and imposed a mandate to more effectively deal with the risks of air toxics.¹⁸⁴ This technology-based approach closely

181. 42 U.S.C. § 7412(b)(3)(A) (Supp. II 1990). See also *Toxics List-EPA to reject industry call for deletion of 189 chemicals*, IX ENVIRONMENTAL POLICY ALERT (Inside Washington Publishers) No. 17, at 5 (Aug. 19, 1992) [hereinafter *Policy Alert*]. Official guidance on the petition process has been put on hold indefinitely by OMB.

182. Quarles and Lewis, *supra* note 176, at 34. The authors believe that scientific uncertainties and sheer bureaucratic red tape will again stall the listing process. See also 58 Fed. Reg. 4164 (1993) denying the first petition to delist a pollutant on January 13, 1993. The Chemical Manufacturers Association's petition to EPA to delete ethylene glycol ether was denied because of a lack of exposure data.

183. 42 U.S.C. § 7412(d)(2) (Supp. II 1990).

184. Schoenbrod, *Goals Statutes or Rules Statutes: The Case of the Clean Air Act*, 30 UCLA L. REV. 740, 819-826 (1983). The non-delegation doctrine states that an overly broad delegation provides so little legislative intent that it effectively makes no delegation at all.

resembles the approach used to control toxic effluent emissions under the Clean Water Act,¹⁸⁵ and because it focuses on sources rather than individual pollutants it will probably translate into very few changes in the initial listing of 189 substances.

D. SOURCES COVERED BY § 112

Consistent with the removal of the health-based approach of the old section 112, EPA is now directed to promulgate categories and subcategories of industrial facilities that emit any of the listed air toxics.¹⁸⁶ These categorical sources are further subdivided into either "major sources" or "area sources."¹⁸⁷ Emission standards must then be established for each category or

185. See, Senate *supra* note 178, at 155, and the Federal Water Pollution Control Act, 33 U.S.C. § 1317(a) (1988).

186. 42 U.S.C. § 7412(c)(2) (Supp. II 1990).

187. 42 U.S.C. § 7412(c)(1) (Supp. II 1990).
Major source - a stationary source that emits, or has the potential to emit, 10 tons or more of any specific air toxic. It also means a stationary source that emits 25 tons of any combination of air toxics. See 42 U.S.C. § 7412(a)(1) (Supp. II 1990).

Area source - any source not considered a major source; however, it excludes motor vehicles. See 42 U.S.C. § 7412(a)(2) (Supp. II 1990), and Senate *supra* note 178, at 151. "Area sources are small diverse facilities and activities that routinely release toxic air pollutants and may include sources like wood stoves, service stations, [and] dry cleaner[s]. . . ."

See also EPA Drops Proposal for CAA Controls on Very Low Emissions of Worst Toxics, 13 INSIDE EPA No. 17, at 1-2 (Apr. 24, 1992). Plans to expand the definition of "major sources" to include emissions of approximately 30 of the worst toxics at levels as low as 1 ton were put on hold by EPA because of opposition by the White House.

subcategory of toxic emitters¹⁸⁸ for both new and existing sources.¹⁸⁹ Since the emission standards for a given category will be established based on the performance of other sources within the same category, this is an area of great interest to industry and environmentalists alike.¹⁹⁰ A preliminary draft list of source categories was published in June, 1991,¹⁹¹ and the initial list of sources came out in July, 1992,¹⁹² eight months after the statutory deadline.¹⁹³ Industry comments to

188. 42 U.S.C. § 7412(c)(2)(Supp. II 1990). It is estimated that most source categories emit between 20-27 pollutants. Changes to Listing of 189 Toxic Air Pollutants Probably Will Be Minimal, EPA Official Says, 23 Env't Rep. (BNA) No. 19, at 1309 (Sept. 4, 1992).

189. 42 U.S.C. § 7412(d)(3)(Supp. II 1990).
New sources - stationary sources constructed or reconstructed after publication of proposed emission standards applicable to that particular source category or subcategory.

Existing source - any stationary source that is not a "new source."

190. Waxman, *supra* note 147, at 1777. Source categories are generally a group of processes or equipment that are functionally, and economically related for the purpose of producing a product. See also Garrett & Winner, The Clean Air Act Primer: Part II, 22 Env'tl. L. Rep. (Env'tl. L. Inst.) 10,252 (Apr. 1992), "A facility that ends up in the "wrong" category because . . . the way the category is defined could pay a heavy price."

191. 56 Fed. Reg. 28,548 (1991).

192. 57 Fed. Reg. 31,576 (1992). The source list was to parallel the source list established for new source performance standards to the extent possible. It was also supposed to try and list the largest source categories first. The list is to be reviewed and revised every eight years, if evidence so warrants. See 42 U.S.C. § 7412(d)(6)(Supp. II 1990).

193. 42 U.S.C. § 7412(c)(1)(Supp. II 1990). The source categories should have been promulgated by Nov. 15, 1991.

the draft list most often dealt with EPA's methodology for ranking sources to be regulated.¹⁹⁴ The ranking methodology was of special interest because the 1990 amendments required emission standards for at least 40 source categories by November 15, 1992,¹⁹⁵ and presumably the largest and most hazardous sources would be regulated first. EPA sent a copy of a proposed rulemaking covering emission standards for hazardous organics, referred to as the HON for Hazardous Organic NESHAP, to OMB in December 1991, but didn't actually issue the proposed rules until December 31, 1992.¹⁹⁶ This mega-rulemaking is expected to reduce emissions for 149 of the 189 listed pollutants in section 112.¹⁹⁷

194. See Letter from Terry F. Yosie, Vice President, American Planning Institute, to Bruce Johnson, Director, EPA Office of Air Quality Planning and Standards (Sept. 18, 1991) (on file with the EPA, Air Docket A-91-14). This letter is an example of the numerous inputs EPA received advocating changes in their ranking methodology, and U.S. ENVIRONMENTAL PROTECTION AGENCY, METHODOLOGY FOR THE SOURCE CATEGORY RANKING SYSTEM (1992).

195. 42 U.S.C. § 7412(c) (Supp. II 1990).

196. 57 Fed. Reg. 62,608 (1992). The HON standards were supposed to have been promulgated by November 15, 1992. The agency was sued for failing to meet this statutory deadline, NRDC v. EPA (D.C.D.C. Sept. 14, 1992). See Environmentalists Sue EPA for Failure to Propose Major CAA Toxics Rule, 13 INSIDE EPA (Inside Washington Publishers) No. 40, at 14 (Oct. 2, 1992).

197. Telephone interview with Martha Keating, Project Officer, Environmental Protection Agency Office of Air Quality, Planning and Standards (Aug. 13, 1992). The 700 plus page rulemaking generically covers hazardous organic emissions and depending on "how you count the beans," could conceivably affect approximately 100 source categories. See also Data-Gathering on Air Toxics Sources Could Slow Regulation Process, EPA Says, Daily Rep. for Exec. (BNA) No. 70, at A-21. Industry concerns about the HON are discussed, including their belief that further
(continued...)

The area source program has different requirements than those imposed on major sources.¹⁹⁸ A listing of area sources does not have to be completed until November 1995, and such a list must include area sources representing 90 percent of the area source emissions of the 30 most hazardous air pollutants.¹⁹⁹ The Congressionally stated goal is to reduce cancer attributable to area sources by at least 75 percent.²⁰⁰ Monitoring and research programs are to be established, as well as development of a national strategy, to meet the emission reduction goals,²⁰¹ with regulations to actually control

197. (...continued)
subcategories will be required in order to effectively differentiate between emission levels associated with batch operations and continuing operation processes.

198. 42 U.S.C. § 7412(c)(3) (Supp. II 1990).

199. *Id.* The 30 most hazardous air pollutants in relation to area sources are those that present the greatest public health threat to the largest number of urban areas.

200. 42 U.S.C. § 7412(k) (Supp. II 1990). Former EPA Administrator, Lee M. Thomas, claimed that about 75 percent of all cancers might be due to non-point source emissions. "[T]hese are small, individual sources, such as drycleaning plants, degreasing operations . . . and other small sources for burning fossil fuels." Brown, *supra* note 7, at 263. These claims are supported by an EPA study assessing the risks from area sources. U.S. ENVIRONMENTAL PROTECTION AGENCY, CANCER RISK FROM OUTDOOR EXPOSURE TO AIR TOXICS (1989); see also 56 Fed. Reg. 64,382 (1991). Proposed standards for regulating perchloroethylene (PCE) from dry cleaners. PCE is the predominant solvent used in the dry cleaning of fabrics.

201. 42 U.S.C. § 7412(k)(2)&(3) (Supp. II 1990). The major portion of the research is to be conducted by EPA, and state and local agencies will be responsible for monitoring the most threatening air toxics in approximately 150 Metropolitan Statistical Areas (populations over 250,000). See Senate *supra* note 178, at 189-190.

emissions to be promulgated by November 2000.²⁰²

E. EMISSION STANDARDS

1. MACT

Once the source categories are identified EPA must promulgate technology-based emission standards for each source category.²⁰³ The standards promulgated for each source category require the "maximum degree of reduction in emissions."²⁰⁴ The acronym used in Congressional hearings to describe this standard is maximum achievable control technology (MACT).²⁰⁵ Congress specifically authorized EPA to take costs into consideration when developing emissions standards.²⁰⁶ Additionally, EPA is to consider not only control technology that removes pollutants at the point of emission, but technologies and strategies that reduce pollution through process changes, process enclosures, or substitution of less hazardous substances.²⁰⁷ "Pollution prevention is to be the preferred strategy whenever

202. 42 U.S.C. § 7412(c)(3)(Supp. II 1990).

203. 42 U.S.C. § 7412(d)(1)(Supp. II 1990).

204. 42 U.S.C. § 7412(d)(2)(Supp. II 1990).

205. See Senate, *supra* note 178, at 167.

206. 42 U.S.C. § 7412(d)(2)(Supp. II 1990); see also Senate, *supra* note 178, at 169. Cost consideration includes actual costs incurred to achieve emission reductions, not theoretical costs. This is not a cost-effectiveness or cost-benefit policy.

207. 42 U.S.C. § 7412(d)(2)(A)-(E)(Supp. II 1990).

possible."²⁰⁸

The statute allows the MACT emission standards to be different for new and existing sources.²⁰⁹ New sources will obviously have the most stringent standards. Standards cannot be less stringent than emission standards achieved by the best controlled similar sources within the same category.²¹⁰ Existing sources may have the same or less stringent MACT standards as new sources.²¹¹ The determination of the permissible standards for existing sources is more complex than for new sources. The floor for MACT for existing sources is based on the "best performing" 12 percent of existing sources in the category.²¹² However, if there are less than 30 sources in the category the MACT standards are based on "the average emission limitation achieved by the best performing 5 sources."²¹³

2. GACT

The new air toxics program allows further flexibility to regulate area sources. The Act provides that EPA may apply

208. See Senate, *supra*, note 178, at 168.

209. 42 U.S.C. § 7412(d)(3) (Supp. II 1990).

210. *Id.* The Administrator is empowered to determine the "best controlled similar source" category.

211. *Id.*

212. 42 U.S.C. § 7412(d)(3)(A) (Supp. II 1990).

213. 42 U.S.C. § 7412(d)(3)(B) (Supp. II 1990).

generally available control technology (GACT) instead of MACT in establishing emission standards for area sources.²¹⁴ The GACT standard is considered less stringent than MACT, and area source standards that are promulgated using GACT are not subject to the MACT floor.²¹⁵ Whether to apply GACT or MACT standards to area sources is a discretionary authority with EPA. When Congress added this option for EPA they were trying to avoid some of the problems encountered under the old act.²¹⁶ Experience indicated that area sources may not be listed if "the only regulatory regime which meets the statutory requirements is considered too costly for the public health benefits to be achieved."²¹⁷

F. RESIDUAL RISK

While the primary approach to the air toxics problem under the 1990 amendments is technology-based, the old health-based approach has not been entirely abandoned. There was Congressional concern that some significant risks would remain even after application of MACT. Consequently, Congress included a provision to deal with possible residual risks.²¹⁸ By November 1996 EPA must determine whether the MACT standards are

214. 42 U.S.C. § 7412(d)(5) (Supp. II 1990).

215. 56 Fed. Reg. 64,385(1991).

216. Senate, *supra* note 178, at 171.

217. *Id.* at 172.

218. 42 U.S.C. § 7412(f) (Supp. II 1990).

protective enough,²¹⁹ and if not, then more restrictive health-based standards will be required.²²⁰ More restrictive standards will be required for those source categories where the MACT standard still has a cancer risk of greater than 1 in a million (10^{-6}) to the person most exposed to emissions from a source category.²²¹ When these residual risk standards become applicable they will effectively ratchet down the MACT standards and provide more protection for public health. To confront some of the long standing policy issues associated with health-based standards, Congress directed the National Academy of Sciences (NAS) to conduct a review of the current risk assessment methodology.²²² After this review EPA must either revise its existing policy or establish a new one.²²³ No residual risk

219. *Id.* A report must be made to Congress on the degree of protection offered by the MACT standards. Congress was leery of health-based standards, so they provided themselves an opportunity to change the standard if warranted and this time provided EPA a long period of time in which to implement the residual risk standards. See also J. GORDON ARBUCKLE ET AL., ENVIRONMENTAL LAW HANDBOOK 574(1991).

220. 42 U.S.C. § 7412(f)(2)(A)(Supp. II 1990). The new health-based standards should be promulgated within 8 years of the original source category emission standard.

221. Senate, *supra* note 178, at 170.

222. 42 U.S.C. § 7412(o)(Supp. II 1990). See also Scroggin Hamel, For Industry, No Breathing Easy About Toxic Pollutants, LEGAL TIMES, Feb. 11, 1992, at 42, col. 4, which speculates that the NAS review will focus on whether the current guidelines comply with requirements to disclose uncertainties and assumptions used in the risk assessment process.

223. 42 U.S.C. § 7412(o)(7)(Supp. II 1990). See also Air Toxics Rules, Permitting Requirements Carry High Costs, White House Council Warns, 22 Env't Rep. (EPA) No. 32 at 1936-1937(Dec. (continued...))

standards may be set until the revised risk assessment guidelines are published.

G. SCHEDULES AND COMPLIANCE DEADLINES

All emission standards promulgated using the technology-based MACT or GACT standards are effective when promulgated.²²⁴ Existing sources have a maximum of 3 years to comply.²²⁵ New sources must generally show the ability to comply before any construction commences.²²⁶ Where construction starts after a proposed standard is published, but before it is finalized, the new source will have 3 years to comply with the final standard if it is more stringent than the proposed standard, if not, compliance is required immediately.²²⁷ To ensure that emission standards were promulgated in a timely manner, unlike under the previous act, Congress added a more realistic timetable for required regulations.²²⁸ However, they went further and added a "hammer" provision to ensure major source categories would be

223. (...continued)
6, 1991). C. Boyden Gray, Presidential Council, in a speech to the American Enterprise Institute, appealed to academics and industry to help improve the risk assessment process.

224. 42 U.S.C. § 7412(d)(10)(Supp. II 1990).

225. 42 U.S.C. § 7412(i)(3)(Supp. II 1990).

226. 42 U.S.C. § 7412(i)(1)(Supp. II 1990).

227. 42 U.S.C. § 7412(i)(2)(Supp. II 1990).

228. 42 U.S.C. § 7412(e)(1)(A)-(E)(Supp. II 1990).

regulated regardless of the lack of federal emission standards.²²⁹ The permit programs that will be operated by the states with approved programs will require major sources to have a permit to emit hazardous pollutants, and pollutants for which no federal standards have been issued will be treated on an individual case by case basis.²³⁰ Where individual standards are set by the states they should be equivalent to anticipated federal MACT standards.²³¹ When a federal standard is finally promulgated, the major source's permit will need to be revised when it is renewed to accommodate regulatory changes.²³² The permitting program is a major addition to the Clean Air Act, and, like the technology-based approach, it was borrowed from the Clean Water Act. While not a specific provision of the air toxics program, it will greatly affect the regulation of air toxics.²³³ Any source subject to regulation under section 112

229. 42 U.S.C. § 7412(j)(Supp. II 1990). This hammer provision only becomes effective as of the date a state has an approved permit program under Title V of the 1990 Clean Air Act Amendments. Furthermore, it applies only to major and not area sources. See also ENVIRONMENTAL POLITICS AND POLICY, THEORIES AND EVIDENCE 229-232 (James P. Lester ed. 1989). This book contains a critical view of "hammer" provisions, especially in environmental legislation.

230. 42 U.S.C. § 7412(j)(2)(Supp. II 1990).

231. 42 U.S.C. § 7412(j)(5)(Supp. II 1990).

232. 42 U.S.C. § 7412(j)(6)(Supp. II 1990).

233. 42 U.S.C. § 7661a(Supp. II 1990).

will require a permit to operate.²³⁴ These permits will detail the specific requirements that apply to each source and will be the major tool to ensure compliance.²³⁵ Once the states have an approved permit program they will operate as the primary permitting authority.²³⁶

H. EARLY REDUCTIONS

The compliance schedules under amended section 112 are more realistic, not only from EPA's standpoint, but from the view of those that will ultimately have to comply with the new emission

234. 42 U.S.C. § 7661b(Supp. II 1990). See also 'Centerpiece' Rules Under Air Act Issued; Permits Required for 34,000 Pollution Sources. 22 Env't Rep.(BNA) No. 10 at 715-716(July 3, 1992).

235. 42 U.S.C. § 7661c(Supp. II 1990). Permits will include enforceable requirements for self-monitoring of emissions, including continuous emissions monitoring in most cases. Periodic reports will be made to facilitate compliance.

236. 42 U.S.C. § 7661a(Supp. II 1990). Although many states already have their own permit programs, most will need revisions in order to meet all the new federal requirements. EPA was supposed to have promulgated regulations governing the permit programs by November 15, 1991, but did not meet the statutory deadline. See also 57 Fed. Reg. 32,250(1992). On July 21, 1992 EPA issued the final regulations governing the permit programs. However, states must submit programs for EPA approval by November 15, 1993, not 3 years from the date of the rules. Additionally, NRDC and 2 other environmental groups filed suit August 11, 1992 challenging the air permit rules. They claim the rules should be rewritten because they allow increases in emissions to go unchecked through the lack of "meaningful compliance schedules" and "operational flexibility" language in the regulations. These groups plan to work with the states to develop more stringent programs that meet the intent of the law. NRDC v. EPA, (CA. D.C.). A suit filed April 13, 1992, by 9 states to compel issuance of the permit regulations is still pending, but EPA is seeking to have it dismissed since the regulations have been issued. New York v. EPA, No. 92-CV-0493(D.C.N.N.Y.).

standards. Congress, however, did not want polluters to wait for the long emission standard setting process to occur before reducing emissions.²³⁷ Therefore, an incentive provision in section 112 encourages early reductions in emissions of air toxics.²³⁸ An existing source that voluntarily reduces its emission levels to 90 percent (95 percent for particulate) below its 1987²³⁹ emission levels will receive an extra six years to comply with the MACT standards (9 years total).²⁴⁰ Reductions must be achieved before the proposal of MACT standards.²⁴¹ EPA issued proposed rules governing the early reduction program June

237. Senate, *supra* note 178, at 176.

238. 42 U.S.C. § 7412(i)(5)(Supp. II 1990). See Laznow Daniel, Overview of the U.S. Environmental Protection Agency's Hazardous Air Pollutant Early Reduction Program, 42 J. AIR WASTE MANAGE. ASSOC. 35(Jan. 1992). The early reductions program is not the same as EPA's voluntary 33/50 Industrial Toxics Project which targets 17 hazardous air pollutants for a 33 percent reduction by 1992 and a 50 percent reduction by 1995. The 33/50 program emphasizes multi-media reductions, not just specific air emission reductions. Early reductions are source specific, while the 33/50 program aims for national reductions.

239. 42 U.S.C. § 7412(i)(5)(C)(Supp. II 1990). See also Senate *supra* note 178, at 177. Congress picked 1987 as the baseline year for data because that was the first year of the Toxic Release Inventory (TRI) and data could easily be verified. EPA has discretion to allow the use of 1985 or 1986 data if they are convinced the data is verifiable. Congress did not want to penalize industries that reduced emissions in the wake of the Bhopal accident; and Stensvaag, Clean Air Act 1990 Amendments, LAW AND PRACTICE § 11.25(Sept. 1991) for a discussion of how to calculate emission reductions.

240. 42 U.S.C. § 7412(i)(5)(A)(Supp. II 1990).

241. 42 U.S.C. § 7412(i)(5)(D)(Supp. II 1990). Sources may also gain the six year extension if there is an enforceable commitment contained in a Title V permit to reduce emissions by 90 percent before the MACT standard is proposed, but the actual 90 percent reduction must occur before January 1, 1994.

13, 1991,²⁴² and final rules were issued December 29, 1992.²⁴³ Under the final regulations, companies are given flexibility to determine which pollutants to reduce and how they want to be defined as a source.²⁴⁴ It is precisely this flexibility that is of particular concern to environmentalists.²⁴⁵ They have the option of claiming the entire facility as one source or a collection of related emission points as a source, or unrelated emission sources located within a contiguous area.²⁴⁶ However, once they sign up for the program they will be subject to federal enforcement. To participate in the program they must sign up by December 1, 1993,

242. 56 Fed. Reg. 27,338(1991).

243. 57 Fed. Reg. 61,970(1992).

244. *Id.* at 61,970. However, reductions of 47 high risk pollutants may only be used in certain cases to count toward the 90 percent reduction. *Id.* at 61,980. Relatively small reductions of these high risk pollutants is deemed fairly significant.

245. Husband, *New Approaches and New Polluters: The Practical Impact of the Clean Air Act of 1990*, 19 FLA. ST. U. L. REV. 861, 879(1991).

246. 57 Fed. Reg. 61,973(1992). EPA's broad definition of "source" under the early reduction program has drawn criticism from the States. The States feel that by allowing the industries to define their source there may be only "paper reductions" in emissions. Specifically, a company may narrowly define their source and achieve the 90 percent reduction, all the while increasing emissions at the other nearby points not included in the source. See Letter from David R. Jordan and Richard E. Grusnick, Presidents, Association of Local Air Pollution Control Offices (ALAPCO) and State and Territorial Air Pollution Program Administrators (STAPPA), respectively, to the EPA Air Docket(A-90-47)(July 29, 1991)(on file with the EPA)[hereinafter letter]; and Letter from Nancy Wittenberg, Director, New Jersey Department of Environmental Protection, to EPA Air Docket(A-90-47)(July 26, 1991)(on file with EPA).

but they also have until that date to withdraw their program participation.²⁴⁷ Participants have until January 1, 1994 to meet the reduction requirements of the program.²⁴⁸ Initially the program will be run by EPA, but when a state has an approved Title V permit program it will assume responsibility.²⁴⁹

Industries will have to carefully examine technical and economic factors before deciding to participate in the program.²⁵⁰ Early reduction will buy time, and costs incurred to reduce emissions can be spread out over 9 years. However, the ultimate MACT standards may impose new costs and requirements that outweigh any benefits gained by early reductions, or compliance may impose costs that won't be required under MACT.²⁵¹ Many questions must be examined before joining the program, but EPA is predicting that the program will attract significant participation and "achieve major reductions of toxic

247. 57 Fed. Reg. 61,977(1992).

248. *Id.*

249. 57 Fed. Reg. 61,970, 61,985(1992). See also letter, *supra* note 246, at 4. STAPPA/ALAPCO advocate the position that states should be able to receive delegation of the early reduction program prior to the approval of the permit program. Permit programs already in existence in a number of states should be adequate to run the program pending acceptance of Title V programs, and would better achieve the overriding policy goals of reducing air toxic emissions.

250. Quarles and Lewis, *supra* note 176, at 35.

251. *Id.* at 62-63.

emissions . . . far earlier than we would otherwise."²⁵²

I. MODIFICATIONS

Section 112(g) requires that modifications²⁵³ to major existing sources must meet MACT standards, regardless of how long the rest of the existing source still has to comply. However, a change that would normally be considered a modification, may be exempt from MACT requirements if the owner or operator can show emission increases are offset by reductions in other similarly hazardous pollutants, or pollutants considered to be more harmful.²⁵⁴ Industries would prefer to avoid having modifications treated as new sources, so there is great incentive to change operations to reduce the levels of emissions.²⁵⁵ EPA

252. Abramson, EPA to Offer Deal on Pollution Cutbacks, L.A. TIMES, June 4, 1991, at A16, col. 1. The quoted predictions are from William Reilly, EPA Administrator. See also Early Reductions - most requests for toxic control delay denied, Vol. IX ENVIRONMENTAL POLICY ALERT(Inside Washington Publishers) No. 18, (Sept. 2, 1992). EPA has denied 90 percent of the 70 applications received because they lacked sufficient technical information for EPA to make an adequate evaluation. As of January 1, 1993 only 12 of 76 enforceable commitment applications were considered complete, and only 7 of the 12 were approved. See Early Reduction Rule for Air Toxics Allows a Year Extension on Compliance, 23 Env't Rep. (BNA) No. 36 at 2213(Jan. 1, 1993).

253. 42 U.S.C. § 7412(a)(5)(Supp. II 1990). A modification is defined as a "physical change in, or change in the method of operation of, a major source which increases the actual emission of any hazardous air pollutant . . ." *De minimis* increases are not considered to be modifications.

254. 42 U.S.C. § 7412(a)(5)(Supp. II 1990).

255. Garrett & Winner *supra* note 190, at 10,250.

was supposed to have published guidance documents by May 1992,²⁵⁶ but this part of the air toxics program has proven to be very controversial. First, EPA's Science Advisory Board (SAB) has been hotly debating how to trade emissions of one hazardous pollutant for another.²⁵⁷ It is difficult to rank air toxics and say with any degree of certainty that two substances can be traded because they cause the same degree of harm.²⁵⁸ Secondly, based on the recommendation of the Council on Competitiveness, President Bush determined that minor air emission changes will not require public notice prior to implementation.²⁵⁹ This policy has the potential to effect

256. Guidance for Air Toxic Offsets, Trading Slated to be Formally Proposed in September, 22 Env't Rep. (BNA) No. 47, at 2567. EPA plans to treat the guidance as a full fledged rulemaking, so proposed guidance slated for September is still months away from being final. See 57 Fed. Reg. 61,986(1992) which states that modification regulations are still in the development stage.

257. Industrial Air Toxics Ranking, Trading System Hits Hard Review at EPA Science Board Meeting, 22 Env't Rep. (BNA) No. 27, at 1644.

258. *Id.* The debate regarding the ranking of air toxics for trading purposes focused on carcinogens versus non-carcinogens, but some experts thought reproductive and neurological effects were not being given enough weight. See EPA Plan Would Deem Toxicity Increase a "Modification" Requiring CAA Review, 13 INSIDE EPA (Inside Washington Publishers) No. 24, at 5(June 12, 1992). A current draft EPA position would make substitution of a more hazardous substance a modification under the regulations and require a permit review.

259. See Bush Expected to Approve Permitting Rule with No Public Comment Required for Revisions, 23 Env't. Rep. (BNA) No. 1, at 6; Bush Sides with Quayle Council on Dispute with EPA Over Clean Air Act Permit Notification, 23 Env't. Rep. (BNA) No. 4, at 395; and 'Centerpiece' Rule Under Air Act Issued; Permits Required for 34,000 Pollution Sources, 23 Env't. Rep. (BNA) No. (continued...)

section 112(g) since there is no clear guidance on what will be considered a "modification" under the regulations and how that guidance will interplay with the offset of other air toxics.²⁶⁰

J. ACCIDENTAL RELEASES - PREVENTION AND RESPONSE

The last major addition to the air toxics program under the 1990 amendments establishes requirements for implementing a program to prevent accidental releases, and response actions to minimize consequences if an accident occurs.²⁶¹ This program is modelled after a similar program enacted in the 1986 Superrund reauthorization amendments.²⁶² EPA must list 100 extremely hazardous pollutants by November 15, 1992.²⁶³ After the list

259. (...continued)
10, at 715-716. Presidential policy differs with EPA's legal position stating that public notice is required to modify a permit. NRDC has indicated that it will file suit to challenge the permitting policy.

260. See note 256 *supra*. Guidance expected later this year should clarify what defines a minor or *de minimis* increase in emissions that allows for exemption from the permitting requirements required for modifications.

261. 42 U.S.C. § 7412(r)(Supp. II 1990); See also Senate *supra* note 178, at 134. The 1989 EPA Acute Hazardous Events Data Base disclosed 11,048 accidental release events between 1982-1986. These events caused 309 deaths, over 11,000 injuries and evacuation of approximately 460,000 people (70 percent of these events occurred at stationary facilities).

262. Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. §§ 11001-10050 (1988 & Supp. II 1990).

263. 42 U.S.C. § 7412(r)(3)(Supp. II 1990). This list is not the same as the list of pollutants under § 112(a)(1). In drawing up the list EPA is to consider substances listed under
(continued...)

is promulgated companies having specific threshold amounts²⁶⁴ of the listed substances must develop a risk management and accident response plan.²⁶⁵ EPA must also provide guidance to state and local agencies in preparing these plans.²⁶⁶ Once the plans become effective they will be treated as standards for enforcement purposes.²⁶⁷ There is some speculation that the "general duty" requirements of the accidental release section create an affirmative duty to identify hazards prior to the implementation of regulations, and may become the basis of an EPA enforcement action.²⁶⁸ It is likely that this section will have the most widespread effect of any one provision under the air toxics program.

IV. STATE PROGRAMS TO REGULATE AIR TOXICS

263. (...continued)
the Emergency Planning and Community Right-To-Know Act, in addition to listing 16 substances specifically included in the statute. Other factors to be considered include the potential severity of effects, likelihood of an accident, and magnitude of human exposure.

264. 42 U.S.C. § 7412(r)(5) (Supp. II 1990).

265. 42 U.S.C. § 7412(r)(7) (Supp. II 1990). Risk Management Plans have elaborate requirements that include; worst case scenario assessment, prevention planning, monitoring, employee training, response plans, and coordination with state and local agencies.

266. Guidance is to be promulgated by November 1993.

267. 42 U.S.C. § 7412(r)(7)(E) (Supp. II 1990).

268. Claiborne, The New Air Toxics Program, 7 A.B.A. SEC. OF NATURAL RESOURCES, ENERGY, AND ENVIRONMENTAL LAW, No. 2, at 55-56 (Fall 1992).

Each State may develop and submit to the Administrator a procedure for implementing and enforcing emission standards for hazardous air pollutants for stationary sources located in such State. If the Administrator finds the State procedure is adequate, he shall delegate to such State any authority he has under the Act to implement and enforce such standards ²⁶⁹

The above delegation set in motion the mechanism for States to take control of their own air toxics programs. As with most environmental legislation passed in the early 1970s there was no federal preemption of clean air programs. However, prior to the 1970 clean air legislation all the States and many local units had various forms of air pollution controls. There was a great deal of variation among these State programs, but all were limited in their ability to effectively deal with the complex issues associated with air pollution.²⁷⁰ The 1970 Clean Air Act Amendments imposed a certain degree of uniformity on the States, but still allowed for flexibility to deal with unique State problems.²⁷¹

Lack of federal commitment to the air toxics program resulted in several states stepping in to fill the necessary gaps. Under the Reagan administration there was a movement to

269. Clean Air Act Amendments of 1970, Pub. L 91-604, sec. 4(a), § 7412(d)(1), 84 Stat. 1685 (codified as amended at 42 U.S.C. § 7412(1)(1)(Supp. II 1990)). See Stensvaag *supra* note 239, at § 11.30, and THE BUREAU OF NATIONAL AFFAIRS, INC., THE CLEAN AIR ACT AMENDMENTS 111(1991) both of which discuss the possibility of a partial delegation; however, partial may only include emission standards or the accident prevention program, and may not be facility or pollutant specific.

270. THAD GODISH, AIR QUALITY 266 (1991).

271. *Id.*

return power and control to the states and to decrease the role of the federal government.²⁷² This policy of decentralization combined with meager federal guidance and a handful of emission standards resulted in many different approaches to the regulation of air toxics. Each state's approach reflected different concerns and policies, as well as varying degrees of technical and financial know-how.²⁷³ Most states with programs have attempted to deal with health concerns associated with non-criteria pollutants that are not regulated at the federal level.²⁷⁴ The state-by-state approach results in different levels of "acceptable risk" and creates a patch work of regulations trying to deal with the same thing.²⁷⁵

In the early 1980s as the states realized the inadequacies of the federal air toxics program, they began to develop their own control strategies. As of 1984 19 states had some form of program in place, and another 23 states were either developing, or planning to develop, their own programs.²⁷⁶ As of 1993, all 50 states have a toxic control program in place; however, these programs cover the full spectrum of approaches to the control of

272. Calabrese and Kenyon, *supra* note 110, at vii.

273. COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY 121 (1990).

274. BNA's analysis of the CAAA *supra* note 269, at 109.

275. Calabrese and Kenyon, *supra* note 110, at 3.

276. Survey, *Toxic Air Pollutants: State and Local Regulatory Strategies* 1-2 (1989) [hereinafter Survey].

air toxics.²⁷⁷ Explanation for this range of approaches includes speculation that states with more severe problems are more apt to be forced into a position of having to deal with the issue.²⁷⁸ Moreover, states with larger financial resources and sophisticated, or professional, legislatures are generally more responsive to environmental concerns.²⁷⁹ One author speculated that the states generally fall within one of the four following categories when it came to environmental issues.

- (1) Progressives - those states with a high commitment and strong institutional capabilities;
- (2) Strugglers - those states with a strong commitment, but lacking in institutional capabilities;
- (3) Delayers - those with the institutional capabilities, but lacking in a strong commitment to the environment; and
- (4) Regressives - those with weak commitments and institutional capabilities.²⁸⁰

Consequently, some states will seek the federal delegation of the air toxics program, and other states will be content to let the federal government take control.

277. *Id.*

278. LETTIE M. WENNER, *ONE ENVIRONMENT UNDER LAWS: A PUBLIC POLICY DILEMMA* (1976).

279. See Lester and Keptner, *State Budgetary Commitments to Environmental Quality Under Austerity*, in *WESTERN PUBLIC LANDS* 193-214 (John G. Francis and Richard Ganzel ed., 1984), and *CITIZENS CONFERENCE ON STATE LEGISLATURES, THE SOMETIME GOVERNMENTS: A CRITICAL STUDY OF THE FIFTY AMERICAN LEGISLATURES* (1971).

280. Lester *supra* note 169, at 73-75.

A. DELEGATION

Guidance that was supposed to be provided to the states to assist them in developing an air toxics program has still not been issued. EPA is currently drafting rules to govern the delegation of the federal air toxics program.²⁸¹ The major issue is striking a balance between needed flexibility and what the states perceive as too many mandates.²⁸² How will EPA decide whether a state program is "equivalent" will be the primary focus of attention when the guidance is issued.²⁸³ Draft guidance at EPA suggests the states will be offered three options.

- (1) Adopt the federal rules;
- (2) A rule-by-rule equivalency determination; or
- (3) A process-level approval that results in permit conditions equally as stringent as the federal program.²⁸⁴

While proposed rules are still in the future, everyone agrees that EPA's review to determine "equivalency" will be an extremely difficult task. For states that already have a program in place it may mean disruptions while alterations take place to meet

281. EPA Drafts Flexible Rule to Delegate Clean Air Toxic Program to States, 13 INSIDE EPA(Inside Washington Publishers) No. 45, at 3,4(Nov. 6, 1992).

282. *Id.*

283. *Id.*

284. *Id.*

federal guidelines.²⁸⁵

B. DEVELOPMENT OF AN AIR TOXICS PROGRAM

States must initially decide whether or not to even develop their own program, or whether federal control of air toxics provides adequate safeguards. Those that choose to develop their own programs generally cite one of the following reasons to support their rationale.

- (1) A toxics program is a method of dealing with past environmental damage;
- (2) public pressure and concern over air toxics effectively forces the establishment of a program;
- (3) concerns raised by the State agency handling environmental issues (expert opinion) advocate an air toxics program;
- (4) federal policy in favor of individual state programs, especially after the 1985 Reagan policy to shift more responsibility to the states; and
- (5) the need to prevent future air toxic problems.²⁸⁶

Most states indicate a combination of reasons were used to support and justify initiation of their air toxic programs;

285. CRAIG A. MOYER AND MICHAEL A. FRANCIS, CLEAN AIR ACT HANDBOOK. A PRACTICAL GUIDE TO COMPLIANCE 3-12 (1991). Delegation requests that ensure compliance, lack adequate resources, or have inadequate implementation schedules will be denied, regardless of whether their standards are deemed equivalent. Revised programs may be resubmitted for approval.

286. *Id.* at A-3 and A-5.

however, state environmental agency concerns, as well as a desire to prevent pollution, were most often cited by the states.²⁸⁷

Common sense dictates that each state assess their air toxics problems and design a program that best addresses their specific situation. EPA is of the opinion that large data collection efforts are not necessary to make these needed assessments, and simpler less expensive methods will suffice.²⁸⁸ Information gathered for the annual Toxics Release Inventory (TRI) and some simple screening survey for point sources should be enough to provide a basis for a toxics control program.²⁸⁹ Additionally, many states already use the TRI for regulatory and enforcement purposes.²⁹⁰ The TRI data and other data sources²⁹¹ identify toxics of concern for a given state

287. *Id.*

288. U.S. ENVIRONMENTAL PROTECTION AGENCY, DESIGNING AND IMPLEMENTING AN AIR TOXICS CONTROL PROGRAM: A PROGRAM DEVELOPMENT MANUAL FOR STATE AND LOCAL AGENCIES 1-3(1990)[hereinafter Designing and Implementing].

289. Data collected under the Emergency Planning and Community Right-To-Know Act does not include information on 16 of the 189 pollutants listed under section 112, nor does it indicate whether releases are from continuous or intermittent sources, only aggregate totals are provided. See U.S. ENVIRONMENTAL PROTECTION AGENCY, TOXICS RELEASE INVENTORY 175, 184(1990).

290. See Industry Reduced Chemical Releases in 1990, Continuing Trend that Began in 1987, EPA Says, 23 Env't. Rep. (BNA) No. 5, at 424(May 29, 1992). There is currently proposed legislation in the Senate that would extend the scope of reporting requirements under the Emergency Planning and Community Right-To-Know Act.

291. Other sources include the 189 pollutants listed under section 112 and lists provided by the National Institute of Occupational Safety and Health, and the American Conference of Governmental Industrial Hygienists.

and ultimately help focus their control efforts. Another use for this data is identification of the sources of the air toxic emissions. Once a state has determined the scope of their toxics problem and ensured an adequate legal basis exists for an air toxics program, they must design a program to fit their needs.²⁹²

Initially states wishing to implement an air toxics program had to choose which toxics to regulate, but with the passage of the 1990 amendments the regulatory floor of 189 substances has been established. However, the states may increase the number of regulated toxics. Some states have very broad definitions of toxic air pollutants, but most have a narrow definition, usually in the form of a specific list.²⁹³ Often these state lists are derived from other sources, such as OSHA safety lists, and use carcinogenicity as a way to distinguish between different levels of anticipated harm.²⁹⁴

Once the decision has been made on what air toxics will be included, the states must decide what type of sources to regulate. New sources have traditionally been regulated more

292. Because of the time it takes to develop, design, and implement a toxics program many states opt for interim measures to informally control toxics. These measures include construction and operating permits or incentive programs to encourage voluntary reductions or pollution prevention efforts.

293. DANIEL P. SELMI AND KENNETH A. MANASTER, STATE ENVIRONMENTAL LAW 17-10(2d ed. 1991)[hereinafter Selmi and Manaster].

294. Schmitt, Note, North Carolina Air Toxics Regulations, 69 N.C. L. REV. 1579(1991). North Carolina used an initial screening process which identified pollutants appearing on the lists of at least five other states.

stringently than existing sources based on the assumption that it would be unfair to the investment expectations of the owners of the existing plants²⁹⁵. This tradition is evidenced in another section of the Clean Air Act governing new source performance standards.²⁹⁶ However, as emission levels are ratcheted down in order to meet attainment levels these old polluting sources become more likely targets of regulation. At present, the limitations on state resources will keep the focus of control on new or modified sources applying for construction or operating permits.²⁹⁷ States looking to implement an air toxics program must assess their available resources and also evaluate their ability to achieve and enforce compliance.

The assessment process to determine the types of sources to cover will entail an assessment of what type of controls to apply. Various control strategies have been discussed previously, but most of the states initially implemented health-based standards.²⁹⁸ The use of control-technologies in the 1990 amendments will make the decisionmaking process easy for those states just developing an air toxics program, but it will create problems for other states relying solely on health-based

295. Selmi and Manaster *supra* note 293, at 17-4.

296. 42 U.S.C. § 7411(Supp. II 1990).

297. Other sources for possible state regulation include mobile sources because of their contribution to the air toxics problem and nontraditional sources like landfills and treatment plants. However, these sources are covered by other regulations which indirectly control air toxics

298. Selmi and Manaster *supra* note 293, at 17-4.

standards as a control approach. Integration of the two programs will be a major task.²⁹⁹ The final permit regulations issued in July 1992³⁰⁰ will directly impact the integration process.

Many of the issues encountered implementing an air toxics program in the early years of the federal program will again surface at the state level. Sharing of information from various data bases would be helpful, and conservation of resources can be achieved by eliminating redundancies with other toxic-related schemes.³⁰¹

An examination of air toxics programs in three different states may assist in illustrating various approaches to the problem. These approaches range from very informal to extremely comprehensive and all encompassing.

C. INFORMAL TOXICS PROGRAM - MISSOURI

According to the 1990 Toxics Release Inventory Missouri ranks 19th out of 54 states, territories, and the District of Columbia in total toxic air emissions.³⁰² However, Missouri

299. Draft North Carolina Council Report May Serve as Model to Other States, Vol. III CLEAN AIR REPORT(Inside Washington Publishers) No. 20, at 11(Sept. 24, 1992).

300. 75 Fed. Reg. 32,250(1992).

301. Designing and Implementing *supra* note 288, at 4-1.

302. Missouri released 44.1 million pounds of toxics into the air in 1990. These releases to the air are reported either as fugitive or stack emissions. See also CHRISTOPHER J. DUERKSEN, ENVIRONMENTAL REGULATION OF INDUSTRIAL PLANT SITING 224-225(Conservation Foundation, 1983) which reported that Missouri was among the states with policies least committed to the environment.

currently has no specific program in place to deal with toxic air emissions. Missouri does maintain an emissions inventory and collects information on air toxics through its permit application process, monitoring requirements for new sources, and questionnaires sent to emitting facilities.³⁰³ There are no separately promulgated State emission standards for toxic air pollutants. Only the seven pollutants that were regulated during the first 20 years of clean air legislation are defined as hazardous under Missouri law.³⁰⁴ These federal emission standards have been incorporated by reference, and other than some registration requirements and work practice standards for asbestos removal no changes have been made.³⁰⁵ Emissions of the air toxics with pre-1990 promulgated standards are considered and evaluated on an informal case by case basis during the permit review for constructing new or modified sources.³⁰⁶ In addition to the NESHAPS standards, the permit process attempts to

303. Survey, *supra* note 276, A-28. A one time screening questionnaire was sent to most point sources in 1987 covering 197 chemicals, submissions on hazardous pollutants were purely voluntary and are unverifiable. St. Louis County is attempting to target and quantify the 189 pollutants listed in the 1990 amendments.

304. Mo. CODE REGS. tit. 10, § 10-6.020(H)(4)(1992).

305. Mo. CODE REGS. tit. 10 § 10-6.080(1992).

306. U.S. ENVIRONMENTAL PROTECTION AGENCY, NATICH DATA BASE REPORT ON STATE, LOCAL AND EPA AIR TOXICS ACTIVITIES 3-12 (1991)[hereinafter NATICH]; see also Mo. CODE REGS. tit. 10, § 10-6.060(1)(1989). State permitting requirements do not apply to sources existing before April 11, 1980.

evaluate emissions of approximately 650 other toxic pollutants.³⁰⁷ These pollutants are informally listed and only about one half of them have any kind of emission standards.³⁰⁸ However, these emission standards are only guidelines and are not legally enforceable. Whatever informal toxic guidelines that do exist have been incorporated from other sources, including but not limited to the 24 hour acceptable ambient limit (AAL) standards used by Massachusetts.³⁰⁹ The State reported it was attempting to revise its permitting requirements to better address air toxics, but legal uncertainties over the extent of the State Air Conservation Commission's statutory authority forced the agency to remove the rulemaking from the calendar.³¹⁰

Unless Missouri revises their basic Air Conservation law,³¹¹ changes regarding state implementation of an air toxics program will most likely mirror the federal program. Under

307. Telephone interview with Bill Fanska, Missouri Department of Natural Resources Air Conservation Commission (Sept. 17, 1992).

308. *Id.*

309. *Id.* See also MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING, THE CHEMICAL HEALTH EFFECTS ASSESSMENT METHODOLOGY AND THE METHOD TO DERIVE ACCEPTABLE AMBIENT LIMITS (1987), Massachusetts has AALs for approximately 110 chemicals and review of other pollutants is continuing. Each chemical reviewed receives a "hazard score" for 4 different health endpoints. These hazard scores are then adjusted to account for occupational considerations, such as chronic exposure, sensitive populations and non-cancer effects.

310. NATICH, *supra* note 306, at 5-12.

311. Mo. ANN. STAT. § 643.010 et seq. (Vernon 1992).

current Missouri law, any rules or regulations promulgated to effectuate compliance with the Clean Air Act may not be more stringent than federal standards and may not be enforced by the state before required by federal law.³¹² Should the state decide to implement their own air toxics plan it should be relatively easy. By designing a program to complement the 1990 Clean Air Act Amendments and incorporating federal guidance the state can ensure a program that meets all the minimum federal guidelines. If Missouri's prior legislative approach to clean air is continued, the state will most likely incorporate the federal program by reference and use federal requirements as a ceiling and not a floor. This conclusion assumes that Missouri will seek federal delegation of the air toxics program; however, such a delegation may overextend the already meager resources devoted to the control of air toxics.³¹³ The state is in the early stages of implementing emission fees to fund their permit program, but long range plans to regulate toxics are not currently being pursued.³¹⁴ This type of minimal involvement works to the advantage of industries since they know the state does not have the resources, or in many cases the technical know-how, to pursue disputes with emitting sources.

312. MO. ANN. STAT. § 643.055(Vernon 1992).

313. Survey, *supra* note 276, at A-32, A-36. This survey indicates that Missouri spent only \$50,000 on air toxics control in 1989 and devoted 1.4 agency work years to the area of air toxics (compared to \$3,000,000 and 55 work years for California).

314. Interview, *supra* note 307.

D. FORMAL PROGRAM FOR NEW OR MODIFIED SOURCES - MICHIGAN

The Michigan air toxics program is very comprehensive for new or modified sources, but is still considered to be in the informal stages with regard to existing sources.³¹⁵ The air toxics program for new or modified sources, even though comprehensive, was also considered informal for the past 10-12 years.³¹⁶ It wasn't until April 17, 1992 that formal rules were promulgated and implemented by the state.³¹⁷

Michigan established an Air Toxics Policy Committee in late 1987 comprised of experts from government, public groups, and industry.³¹⁸ The committee was tasked with making recommendations on proposed regulations for the control of air toxics.³¹⁹ Michigan's approach to the problem sought to reach a consensus among the many various groups prior to implementing

315. Survey *supra* note 276, at 5-48.

316. Telephone interview with Gerald L. Avery, Director, Michigan Department of Natural Resources, Air Quality Division, Lansing, Michigan (July 21, 1992).

317. MICH. ADMIN. CODE r. 336.1230(1992). Early efforts to control air toxics included using Threshold Limit Values for non-carcinogens in permits for stack emissions. For carcinogens with EPA or OSHA standards the Michigan Air Quality Division relied on the already existing standards. Cancer risk assessment was added to new source permit review in 1981 and relied on inhalation route exposure data.

318. Among the public and industry groups were representatives from the American Lung Association, Sierra Club, Ford, and Dow Chemical.

319. MICHIGAN DEPARTMENT OF NATURAL RESOURCES, FINAL REPORT OF THE MICHIGAN AIR TOXICS POLICY COMMITTEE (Sept. 14, 1989) [hereinafter Policy Report].

a formal air toxics program.³²⁰ The committee's final report was issued September 14, 1989, but passage of the federal Clean Air Act Amendments of 1990 delayed formal state regulations until 1992.

Michigan's final air toxic regulations adopted the recommendations of the committee. These new air toxic rules require that emissions from new and modified sources be below the maximum allowable emissions rate based in the application of best available control technology (T-BACT).³²¹ There is also a health based standard that cannot be exceeded.³²²

In evaluating proposals concerning air toxic regulations the biggest issue confronted by the committee, and the one it spent the most time evaluating, was what to include in the definition of toxic air contaminants (TACs).³²³ Industry sources were very concerned that there be some degree of "predictability and workability" in the proposed regulations; however, the committee determined that one static list of TACs would not best deal with the industrial diversity present within the state.³²⁴ Therefore, the state adopted a definition of TACs that includes

320. Selmi and Manaster *supra* note 293, at 17-2.

321. MICH. ADMIN. CODE r. 336.1102(1992). "'T-BACT' means the maximum degree of emission reduction which the commission determines as reasonably achievable for each process that omits toxic air contaminants, taking into account energy, environmental, and economic impacts and other costs."

322. MICH. ADMIN. CODE r. 336.1231(1992).

323. Policy Report *supra* note 319, at 20.

324. *Id.*

virtually all chemicals not already covered by national ambient air quality standards or specifically exempted.³²⁵ There are over 1200 substances that may require on a case by case basis an environmental acceptability assessment during the permitting of a new or modified source.³²⁶

Many options were considered before the state elected to implement a straightforward case by case control technology requirement.³²⁷ The Michigan T-BACT approach is designed to be more flexible than the federal BACT definition, and contains an added degree of "reasonableness."³²⁸ The analysis to be applied to determine what T-BACT applies is process specific as opposed to pollutant specific. The burden of determining what T-BACT should apply to a given process is placed on the emitting

325. MICH. ADMIN. CODE r. 336.1120(e) (1992). The state has exempted 40 substances which their studies indicated would not be present in the outdoor atmosphere in quantities or duration to be harmful to public health.

326. The 1200 substances are derived from the following lists maintained in a database by the state.

- (1) Michigan Critical Materials Register;
- (2) American Conference of Governmental Industrial Hygienists and National Institute for Occupational Safety and Health booklets;
- (3) SARA 313 Reporting list;
- (4) National Toxicology Program and International Agency for Research on Cancer lists; and
- (5) International Joint Commission's Great Lakes Water Quality Board 1987 Report.

327. Policy Report *supra* note 319, at 13-16. Eight specific control technology requirements were considered and rejected by the Air Toxics Policy Committee. These ranged from various tiered approaches to specific limits for each pollutant.

328. *Id.*

source requesting a permit.³²⁹ The regulations specify types of scientific information that must be supplied when making a T-BACT demonstration.³³⁰ The states anticipate that the emitting sources will be in the best position to determine T-BACT for their processes, and that any increased initial costs will be offset by minimization of future retrofitting costs.³³¹ However, this case by case approach to T-BACT will also increase the costs of the permitting process and muddy any degree of predictability that was sought by the committee when they recommended their proposed air toxic regulations.³³²

In addition to the control technology requirements, the State has developed a tiered approach for a health assessment

329. Policy Report *supra* note 319, at 45. The state instructs applicants for permits to follow a six step analysis to determine which T-BACT to apply.

- (1) Determine which toxics are to be evaluated.
- (2) Determine all potential process emissions, including fugitive emissions.
- (3) Identify any potentially sensitive concerns.
- (4) Determine what would have been applied if T-BACT did not exist, then identify alternative control strategies that are available.
- (5) Determine reasonableness of most efficient alternative.
- (6) Establish emission limits with reasonable margin of safety.

330. MICH. ADMIN. CODE r. 336.1230(6) (a-f) (1992). See also MICH. ADMIN. CODE r. 336.1230(4) (1992) which sets forth a *de minimis* exception to the T-BACT analysis process. Emissions of 0.1 lb per hour of non-carcinogens are exempt provided they meet certain screening levels. Michigan's *de minimis* standards are modelled on Maryland's standards.

331. Policy Report *supra* note 319, at 13.

332. *Id.*

analysis.³³³ In assessing health impacts from residual emissions the committee quickly concluded that no one method would be accepted by everyone, and that several approaches would be more protective of human health.³³⁴ The State approach to carcinogens incorporates the widely accepted risk assessment standard of one in a million risk.³³⁵ So, 1×10^{-6} is the acceptable "initial risk screening level" (IRSL)³³⁶ for any process emitting carcinogens. However, a plant is exempt from the IRSL if it can meet a "secondary risk screening level" (SRSL)³³⁷ of 1×10^{-5} on a plantwide basis. The recommended risk assessment methodology used by Michigan is the one espoused by EPA in their 1986 Guidelines for Risk Assessment; however, in order to accommodate new methodologies the rules allow for other methods to be utilized if their appropriateness can be demonstrated.³³⁸ Michigan's regulations covering carcinogenic screening levels are very detailed and employ quantitative risk assessments which use linear non-threshold models similar to ones

333. MICH. ADMIN. CODE r. 336.1231 and 336.1232(1992) for carcinogenic and non-carcinogenic risks, respectively.

334. Policy Report *supra* note 319, at 26.

335. MICH. ADMIN. CODE r. 336.1231(1)(1992). Michigan specifically adopted the EPA standard of 1×10^{-6} by incorporating it by reference.

336. MICH. ADMIN. CODE r. 336.1109(d)(1992).

337. MICH. ADMIN. CODE r. 336.1119(b)(1992).

338. MICH. ADMIN. CODE r. 336.1231(2)(1992).

used by EPA, OSHA and the National Academy of Sciences.³³⁹

For non-carcinogenic air toxics the State has adopted an "initial threshold screening level" (ITSL).³⁴⁰ The ITSL assumes that there is a dose level for chemicals below which no adverse effects will occur. The State rules provide a hierarchical approach for selecting a methodology for determining the ITSL.³⁴¹ The hierarchy depends on the availability of data. As the quality of data decreases, the lower levels on the methodology hierarchy are used. When less data is available, larger "safety factors" are employed to make adjustments aimed at the protection of human health.³⁴² The top of the hierarchy uses "inhalation reference concentrations" (RfC) to determine the ITSL. If an RfC exists then it becomes the ITSL.³⁴³ Other methods to determine the ITSL use occupational exposure levels divided by 100, inhalation reference doses (RfD) already used by EPA, RfDs calculated using EPA's methods, a seven day No Observed Adverse Effects Level (NOAEL), or other inhalation or oral animal

339. Policy Report *supra* note 319, at 35.

340. MICH. ADMIN. CODE 336.1109(e) (1992)

341. MICH. ADMIN. CODE 336.1232 (1992).

342. Policy Report *supra* note 319, at 27.

343. MICH. ADMIN. CODE r. 336.1109(c) (1992). "'RfC' means a conservative estimate of the daily exposure to the human population, including sensitive subgroups, that is likely to be without appreciable risk of deleterious effects during a lifetime. . . ." See generally U.S. ENVIRONMENTAL PROTECTION AGENCY, INTERIM METHODS FOR DEVELOPMENT OF INHALATION REFERENCE CONCENTRATIONS, Review Draft 1990.

study formulas.³⁴⁴

While Michigan's regulations only currently cover new or modified sources, they are working on regulations for existing sources. It is anticipated that regulations developed for existing sources will differ significantly from the regulations discussed above.³⁴⁵ Increased costs associated with retrofitting existing sources with new technologies will mandate regulations with different approaches.³⁴⁶

E. FORMAL PROGRAM COVERING ALL SOURCES - MARYLAND

The 1990 Toxics Release Inventory reports that Maryland industries emit over 12.9 million pounds of toxic air pollutants annually.³⁴⁷ While Maryland is not one of the larger emitting states, it is regarded as having one of the most comprehensive air toxic programs. All phases of Maryland's program are currently being implemented, which include controls for both new and existing sources of toxic emissions.

Maryland defines toxic air pollutants fairly broadly and

344. MICH. ADMIN. CODE r. 336.1232(f-h) (1992).

345. Policy Report *supra* note 319, at 2.

346. Telephone interview *supra* note 316. Regulations covering existing sources are anticipated for early 1994.

347. This figure represents actual in-state emissions, but does not include emissions carried into Maryland from other sources. The middle Atlantic states receive a good deal of toxic emissions from the south due to weather patterns along the east coast. Whether directly related or not, Maryland had the second highest cancer rates per 100,000 people during the 1970s and in the 1980s it was lower, but still ranked number 5. See Brown *supra* note 7, at 154, 229.

includes many pollutants not covered by national or state ambient air quality standards. Toxic air pollutants are divided into two classes under the Maryland program. Class I toxics are specifically listed in the regulations,³⁴⁸ and include pollutants generally regarded as known, probable, or potential carcinogens.³⁴⁹ While the Class II toxics are also listed in the regulations, they are defined more broadly based on the term "health hazard" as used in the State's right-to-know laws,³⁵⁰ and are regarded as non-carcinogenic. As might be expected, the number of regulated toxics is more extensive for new sources³⁵¹ than it is for existing sources.³⁵² While new source regulations cover all the pollutants on the Class I and Class II lists,³⁵³ existing sources cover only 39 of the 260 Class I toxics in addition to all of the Class II toxics.³⁵⁴

348. MD. REGS. CODE tit. 26.11.15, § .11(1992).

349. The sources of information used to determine listing by the State of Maryland are the following: The International Agency for Research on Cancer, Occupational Safety and Health Administration, National Toxicology Program, and the Superfund Amendments Reauthorization Act, Title III.

350. MD. ANN. CODE art. 89, § 32D(1985).

351. MD. REGS. CODE tit. 26.11.15, § .01(B)(10)(1992). New source means any source constructed, or reconstructed, on or after July 1, 1988.

352. MD. REGS. CODE tit. 26.11.15, § .01(B)(7)(1992). Existing source means any source constructed before July 1, 1988, or a source that had an air quality construction permit before that same date.

353. Currently there are 743 listed pollutants, but the open-ended Class II definition may increase this number.

354. Currently this is 546 pollutants.

The Maryland air toxics program generally applies to any source, new or existing, that is required to obtain an air permit.³⁵⁵ This program, with the exception of several sources, covers all stationary sources of emissions in the state.³⁵⁶ Additionally, the program includes a *de minimis* emission level exemption.³⁵⁷ Emissions from a facility that are less than 0.5 lb/hour of a Class II pollutant (non-carcinogenic) with a screening level³⁵⁸ greater than 200 micrograms per cubic meter are exempt from all but reporting requirements. Furthermore, emissions of Class I (carcinogens) less than 0.5 lb/hour and 350lb/year are exempt if their screening level is greater than 1 microgram per cubic meter.³⁵⁹ The State estimates that their program will cover approximately 250 new sources and 450 existing sources each year.³⁶⁰

Maryland's approach to regulating air toxics combines the

355. MD. REGS. CODE tit. 26.11.15, § .03(A)(1992).

356. MD. REGS. CODE tit. 26.11.15, § .03(B)(1992). Maryland has created specific exemptions for fuel burning equipments, char-broilers, and gasoline stations. Other than California, no state to date has chosen to regulate mobile sources as part of a state air toxics program.

357. MD. REGS. CODE tit. 26.11.15, § .03(B)(2)(c) & (d)(1992).

358. MD. REGS. CODE tit. 26.11.15, § .01(B)(15)(1992). "'Screening level' means a concentration of a toxic air pollutant in the atmosphere used to evaluate the air quality impacts of a single premises."

359. MD. REGS. CODE tit. 26.11.15, § .03(B)(2)(c) & (d)(1992).

360. MARYLAND DEPARTMENT OF THE ENVIRONMENT, BRIEF SUMMARY OF MARYLAND'S AIR TOXICS REGULATIONS 1 (Apr. 1991).

use of control technology, ambient guidelines, and risk assessment. It is very similar to what the federal program will look like when residual risk standards go into effect in the year 2000. There are three major requirements for regulated sources under the Maryland program. Initially sources are required to quantify their emissions of toxic pollutants,³⁶¹ and then sources must apply the best available control technology.³⁶² Lastly, sources must determine whether any remaining emissions unreasonably endanger human health.³⁶³

Under the quantification prong of Maryland's approach each new source must quantify any toxic air pollutant emitted, and existing sources must quantify those specifically listed in the regulations. The burden of such quantification has been placed on the emitting facility. It is industries responsibility to provide emissions data, monitoring data, and modelling results to the agency. The data supplied to the state must be of sufficient detail to allow the state to make a determination of whether or not the source is complying.³⁶⁴ Initial emissions analysis may be based on good engineering judgment; however, more precise emission estimates may be required.³⁶⁵ Other methods of quantification include modeling for individual toxics, or

361. MD. REGS. CODE tit. 26.11.15, § .04(1992).

362. MD. REGS. CODE tit. 26.11.15, § .05(1992).

363. MD. REGS. CODE tit. 26.11.15, § .06(1992).

364. MD. REGS. CODE tit. 26.11.15, § .04(A)(2)(1992).

365. MD. REGS. CODE tit. 26.11.15, § .04(D)(1)(1992).

modeling for groups of toxics focusing on concentrations of the most toxic of the group.³⁶⁶ Prior to implementation of their program Maryland did a cost analysis and divided emission estimate costs into two categories: (1) costs to perform the stack tests, and (2) costs generally associated with other estimation methods.³⁶⁷ Based on a formula the state estimated that complex industrial installations would pay between \$70,000 and \$100,000 to estimate the emissions from each stack.³⁶⁸ Less complex industrial installations would pay between \$20,000 and \$40,000 per stack.³⁶⁹ Industrial facilities not using stack tests were all categorized as complex, moderate, or simple and costs to perform emission quantification were estimated at between \$96,000 and \$398,000 per year.³⁷⁰ By requiring industry to provide this data the state is able to conserve limited resources and place a large percentage of the costs of the toxic program on the actual polluters.³⁷¹

Based on the types and amounts of toxic pollutants discharged, the state requires that most new sources use the best

366. MD. REGS. CODE tit. 26.11.15, § .04(D)(2)(a) & (b) (1992).

367. Designing and Implementing *supra* note 288, at 3-3.

368. *Id.*

369. *Id.*

370. Designing and Implementing *supra* note 288, at 3-4.

371. Class I and highly toxic Class II pollutants were required to be quantified by 1989, and all others should have been quantified by January 1991.

available control technology (T-BACT)³⁷² to reduce emissions.³⁷³ T-BACT is a top-down approach that requires a permit applicant to initially identify the most stringent control possible and then quantify emissions. This approach assumes that the most stringent control possible is T-BACT. The thrust of this method mandates state of the art technology unless a source can demonstrate it is unable to afford the requirements. However, T-BACT is determined on a case-by-case basis and costs and toxicity may both be considered, but the burden of proof for obtaining a less stringent control is on the applicant. The application of T-BACT requirements is done independently of ambient impacts, comprising the third step of Maryland's toxic program, but once T-BACT is determined, it is coupled with those ambient impacts in order to see what, if any, residual risks still exist.

The third step of Maryland's air toxics program requires sources to show that their emissions will not unreasonably endanger public health.³⁷⁴ This is generally referred to as the "ambient impact requirement." There are three ways under the

372. MD. REGS. CODE tit. 26.11.15, § .01(B)(3)(1992). T-BACT "means that production technology, emissions control technology, operation and maintenance procedures, other measures, or combinations of them that results in the maximum degree of emission reduction that the Department determines, on a case-by-case basis, is achievable by an installation, for each toxic air pollutant discharged, taking into account the potency and toxicity of each toxic air pollutant discharged as well as technical and economic feasibility."

373. MD. REGS. CODE tit, 26.11.15, § .05(1992)

374. MD. REGS. CODE tit. 26.11.15 § .06(1992)

Maryland regulations that sources may demonstrate they will not endanger human health.³⁷⁵ The primary method under this complex approach places the burden on emission sources to show that increases in ambient concentrations will not exceed specified "screening levels."³⁷⁶ These screening levels are established for carcinogens and toxic effects other than cancer.³⁷⁷

The screening levels for carcinogens are called "risk based screening levels." These screening levels are developed using risk assessment methodologies. Under the Maryland regulations these risk-based levels represent "[t]he annual average concentration, in micrograms per cubic meter, that would increase a persons lifetime cancer risk by 1 in 100,000 (1×10^{-5}) if the person were continuously exposed to the concentrations for 70 years."³⁷⁸ Most of the risk-based screening levels are derived from recommendations by the EPA's Carcinogen Assessment Group (CAG) for inhalation exposure.

Screening levels for other non-carcinogenic toxic effects are established using either Threshold Limit Values (TLVs) or

375. MD. REGS. CODE tit. 26.11.15 § .07(1992).

376. MD. REGS. CODE tit. 26.11.15 § .01(B)(15)(1992).
"'Screening levels' means a concentration of a toxic air pollutant in the atmosphere used to evaluate the air quality impacts of a single premises. . . ."

377. MD. REGS. CODE tit. 26.11.15 §§ .07(B)(1) & (2)(1992).

378. MD. REGS. CODE tit. 26.11.5 § .08(B)(1)(1992).

Threshold-based Screening Levels.³⁷⁹ TLVs are concentrations of substances in the air that generally represent safe exposure levels to those workers exposed to such substances.³⁸⁰ TLV-based screening levels for toxic pollutants use the established TLVs as a baseline and then divide by 100 to determine the average concentrations allowed for either an 8 hour or 1 hour level.³⁸¹ In situations where no TLVs have been established for a pollutant, the regulations specify procedures for developing screening levels based on existing toxicity data.³⁸² These screening levels are called threshold-based because they rely on various health effect thresholds.

The screening levels discussed above may not be appropriate for every substance, so Maryland developed a "second tier analysis"³⁸³ based on dose response data for carcinogens and

379. MD. REGS. CODE tit. 26.11.5 §§ .01(B)(15)(d) & (18)(1992).

380. TLVs are determined by the American Conference of Governmental Industrial Hygienists (ACGIH), and summaries of relevant studies and references are published annually in a book called Documentation of the Threshold Limit Values.

381. MD. REGS. CODE tit. 26.11.5 § .08(A)(1)(a), (b) & (c)(1992). Determinations of 8 hour or 1 hour levels, or both, depend on whether there are TLVs that should never be exceeded (TLV-C), TLVs that may only be exceeded for a very short time (TLV-STEL), or normal TLVs representing an average 8 hour workday and 40 hour work week (TLV-TWA). These standards represent the most commonly used averaging times according to STAPPA/ALAPCO. See Designing and Implementing *supra* note 288, at 1-26.

382. MD. REGS. CODE tit. 26.11.5 § .08(A)(2)(1992).

383. MD. REGS. CODE tit. 26.11.5 § .01(B)(16)(1992). An optional procedure to demonstrate compliance using either acceptable ambient levels or insignificant risk concentrations.

"acceptable ambient levels" (AALs) for non-carcinogens.³⁸⁴ The AALs are less conservative, but are still considered protective of human health. A unique aspect of the "second tier analysis" is its consideration of cumulative effects. Maryland considers how air toxic emissions interact with other air toxics emitted by other sources.³⁸⁵

Lastly, Maryland's regulations allow an air emission source to establish allowable emissions via a special permit when compliance with any established screening levels for carcinogens is demonstrated to be impossible.³⁸⁶ Sources requesting these special permits perform a separate source specific risk assessment that provides an opportunity to use more realistic exposure assumptions.³⁸⁷ This option also allows for acceptance of risks exceeding 1 in 100,000.

Maryland estimates that their program has resulted in an 80 percent reduction in both carcinogens and toxic non-carcinogens

384. Md. REGS. CODE tit. 26.11.5 § .01(B)(1)(1992). "[a] concentration of toxic air pollutant in the atmosphere that the Department determines will provide a margin of safety to protect the public health from toxic non-carcinogenic effects that may be caused by the toxic or pollutant. . . ." See also Calabrese and Kenyon *supra* note 110, at 35-49 for a discussion on the development of AALs and various approaches that may be varied in order to be consistent with organizational resources and time restraints.

385. In evaluating interaction between emission sources the State will not allow increased dispersion as a method for gaining compliance. See Md. REGS. CODE tit. 26.11.15 § .05(C)(3)(1992).

386. Md. REGS. CODE tit. 26.11.5 § .10(1992).

387. The conservative assumption of continuous exposure for 70 years may be changed to reflect more realistic exposure data.

from the industrial sector. This is estimated to be a six million pound per year reduction in air toxics. Other non-carcinogens that account for approximately 70 percent of industrial emissions should also be reduced by 80 percent when the revised 1992 regulations are fully implemented. Maryland's extensive program regulating both existing and new sources is considered to be in the forefront of toxic regulations.³⁸⁸ Their method of assessing costs of their program to emitting sources is innovative and resembles the permit fee system established pursuant to the 1990 Clean Air Act Amendments, but the new federal permit program will more fully fund the state program. The Maryland Air Management Administration does not anticipate having to make any major changes to fully incorporate the requirements of the 1990 Clean Air Act Amendments.³⁸⁹ However, the state will probably regulate new area sources not presently covered once the federal program specifies which area sources are to be covered. No changes are expected in the coverage of major sources other than perhaps some additional control requirements. T-BACT standards may have to be updated to more closely meet the new MACT requirements, e.g. chrome plating. "[I]t is clear that Maryland industry, and other Maryland businesses never before directly regulated by the Act, will incur

388. Survey *supra* note 276, at 5-45.

389. Telephone interview with Carl Rivkin, Maryland Department of the Environment, Air Management Administration (Oct. 26, 1992).

significant costs in complying with the new provisions."³⁹⁰ The current listing of pollutants by Maryland incorporates the 189 listed under the 1990 amendments, but a new rulemaking has just added 33 pollutants to the Maryland Class I list, 9 of which were shifted from the Class II list to the Class I list.³⁹¹ The complexity of the Maryland program, in addition to its comprehensive nature, presents problems for small sources that don't have the technical sophistication to understand the requirements in order to comply. However, technical assistance programs aimed at these sources should ensure further emission reductions and help keep the Maryland air toxics program on the leading edge.

V. IMPACTS AND CONCLUSIONS

The good intentions and activist ideals behind the air toxics program passed in 1970 were soon replaced with harsh realities. It remains to be seen if those same realities will haunt the 1990 amendments. One fact that is certain though is the almost monumental task facing EPA to implement not only the air toxics program, but all the other sections of the 1990

390. Smith and Twicki, Clean Air Act Amendments Impact Maryland, MARYLAND BAR JOURNAL, Vol. 24, No. 3, May/June 1991.

391. 19:22 Md. Reg. 1990(Oct. 30, 1992). These additional listings were based on 1989 updates in the data provided by the International Agency for Research on Cancer. The new listings became effective November 9, 1992.

legislation.³⁹² As discussed earlier, EPA has already been late on meeting deadlines and missed others completely. Hopefully, new approaches to the regulatory process, such as "reg-neg," and increased involvement of affected parties will either speed up the process or reduce the number of legal challenges.³⁹³ The degree of White House involvement may continue to be a major factor. President Clinton has disbanded the Council on Competitiveness, but whether the Office of Management and Budget (OMB) will continue to play such a significant role is still open for speculation.³⁹⁴ A "greening" of the White House could have almost immediate impacts on the upcoming federal air toxics regulations.

Until most of the needed regulations are promulgated by EPA the states are in a holding pattern with respect to implementation of new air toxic programs, or integration with existing programs. The complexity of some of the air toxic provisions all but prohibits state action until guidance is issued. The federal delay creates a domino effect all through

392. The Clean Air Act Amendments of 1990 require over 55 major rules within the first 2 years, not to mention numerous guidance documents, reports to Congress and creation of scientific panels to study air issues.

393. Husband *supra* note 245, at 898.

394. Lavelle, EPA Calls Off Sessions on Rules, NAT'L L. J., July 8, 1991, at 28. OMB was very ambivalent to the process of regulation by negotiation and would not commit themselves to the results of the process.

the process and especially at the state level,³⁹⁵ while compliance deadlines are either looming on the horizon or appear in the rear view mirror. State governments are being asked to take on an incredible responsibility, and some wonder if they're capable.³⁹⁶ EPA estimated it needed million in 1992 alone to implement the air toxics provisions.³⁹⁷ Using that figure as a gauge, imagine what it will cost the states. Nearly everyone is in favor of clean air, but when environmental dollars mean cuts in other programs, like housing, then the commitment begins to wane. States are also worried about how to attract and keep qualified government employees at the state level. It is difficult to compete with more lucrative positions in private industry. This fact also has industry worried. State programs without resources or qualified personnel translate into delays in the issuance of permits, or in obtaining necessary guidance and direction. Financial constraints will probably result in higher

395. GARY C. BRYNER, BLUE SKIES, GREEN POLITICS; THE CLEAN AIR ACT OF 1990, at 165(1993).

396. State, Local Regulations Called Vital to Success of 1990 Clean Air Act. 22 ENV'T REP.(BNA) No. 8, at 489(June 21, 1991). Comments of Gerald Emion, deputy director of EPA Region X.

397. U.S. GENERAL ACCOUNTING OFFICE, AIR POLLUTION, EPA'S STRATEGY AND RESOURCES MAY BE INADEQUATE TO CONTROL AIR TOXICS 26-30(June 1991). Even though EPA's internal documents estimated their needs for air toxics at \$76 million, or \$38 million for high priority activities, they only asked for \$13.8 million. EPA claimed their allocation actually grew by 70.3 percent. See also House Subcommittee Questions EPA Funding for Clean Air Act Industrial Toxics Provisions, 22 ENV'T REP. (BNA) No. 29, at 1767(Nov. 15, 1991), which states that the air programs statutory deadlines help it get funding over more goal oriented environmental legislation.

user fees,³⁹⁸ or may lead to increased cooperation among the states. Interstate cooperation can cut costs by the sharing of information and resources. Increased industrial costs³⁹⁹ will probably be passed on to the general public, and may have effects on the American lifestyle never contemplated by Congress.⁴⁰⁰

It is believed that the 1990 air toxics program is a vast improvement over its predecessor. The use of technology-based standards in conjunction with health-based standards in the future will not eliminate the toxic problem, but it does give EPA and the states a more coherent approach.⁴⁰¹ The old battle between risks and economic impacts still exists, but at least the new law specifically allows for consideration of costs and technological limitations. The EPA will no longer have to make decisions to either close an entire industry, or not regulate at all.⁴⁰² Hopefully this addition of flexibility will be more of a help than a hinderance, and the problems associated with too much regulatory discretion under the old law will not be

398. Motiuk and Pearson, The 1990 Clean Air Act Amendments; Impacts on New Jersey Industry & Government 21 SETON HALL L. REV. 1067, 1099(1991).

399. See Peters, The Clean Air Act Amendments of 1990, 8 SANTA CLARA COMPUTER & HIGH TECH. L. J. 233, 242(1992). Estimated costs to industry each year are in the \$50 billion range.

400. Husband *supra* note 245, at 899.

401. Munroe, The Clean Air Act Amendments of 1990: Will Hazardous Air Pollutants Finally Be Regulated?, 5 ADMIN. L. REV. 161, 201(1991).

402. Chard, Note, The 1990 Clean Air Act Amendments: Section 112 Comes of Age, 59 U. CIN. L. REV. 1253, 1272(1991).