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Potential Fall Out From the National Acid Precipitation Assessment Program

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I. INTRODUCTION

In 1980, Congress, as part of the Acid Precipitation Act of 1980,[1] created the National Acid Precipitation Assessment Program (NAPAP). The program was designed to identify the causes and sources of acid rain, to evaluate its environmental, social, and economic effects and to assess potential methods of control.[2] As the NAPAP neared its conclusion it was hoped that the results of the study would shift the focus of the national debate from whether there should be a new acid rain control program to how that program should be designed.[3]

Ten years and $540 million later, the results are in, and nobody's happy. Environmentalists claim the results underestimate the impact of acid rain on the environment and on the economy.[4] Industry is upset because Congress has passed new legislation which seems to ignore the results of the NAPAP. This paper will examine the possible application of those results to two aspects the of Clean Air Act: International Air pollution under §115 and National Ambient Air Quality Standards under §108.

II. CONSULTING THE EXPERTS

According to some studies, damage due to acid deposition is extensive.[5] The World Resources Institute claims that "[e]xtensive death of U.S. forests and $5 billion in annual crop

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1. 42 U.S.C. § 8901-8912 (1988).
2. 42 U.S.C. § 8903 (1988).
3. Larry Blackwood, *A Conceptual Framework for an Acid Rain Control Program*, 19 ENVTL. L. REP., (ENVTL. L. INST.) 10166 (1989).
4. *Ozone, Acid Rain Causes Extensive Damage to U.S. Crops, Forests, WRI Says in Report*, 20 ENV'T. REP. (BNA) 1779 (1990).
5. Amy Fraenkel, *The Convention on Long-Range Transboundary Air Pollution: Meeting the Challenge of International Cooperation*, 30 HARV. INT'L L.J. 447, 449 (1989) (citing MOLSKI & DMUCHOWSKI, EFFECTS OF ACIDIFICATION OF FORESTS AND NATURAL VEGETATION, WILD ANIMALS AND INSECTS, ACIDIFICATION AND ITS POLICY IMPLICATION 29, (T. Schneider ed. 1986); Cameron, *International Cooperation and Acid Rain Pollution: Establishing the Framework for Control* 18 INT'L J. ENVTL STUD. 129 (1982).

losses are attributable to acid rain and ozone pollution."[6] According to the Institute's report, *Air Pollution's Toll on Forests and Crops*, studies such as the NAPAP "underestimated the impact of air pollution on forests and crops."[7] Apparently, an increase in chronic stress to the forest can result in a complete ecosystem collapse in which trees lose their resistance to pollution and fail to reproduce. Some claim that this has already happened in Ontario and Tennessee near high emission sources.[8]

The concern over acid rain is not limited to North America. One recent assessment estimates that the damage caused by acid rain in Europe to forests, lakes, materials, crops and human health combined exceeds $13 billion annually.[9]

The studies on acid rain are extensive. However, despite the "more than 3,000 acid rain studies in North America and Europe, some scientist feel there is not enough evidence to prove the cause and effect relationship between acid rain and environmental damage."[10] Presently, there is sharp disagreement in the scientific community regarding the extent of the damage being caused by acid rain (if any) and the cost of acid rain reduction.

For example, with respect to lakes, cause and effect is particularly difficult to prove because acidification of lakes is a naturally occurring event.[11] According to Edward C. Krug, soil scientist with Illinois State Water Survey, "highly acidic lakes [are] common throughout the world, especially in New Zealand and Australia."[12] While acknowledging that "some lakes in New York's Adirondack Mountains are acidic," Krug asserts that this is "due to causes other than acid rain."[13]

Krug claims that the Adirondack lakes had historically been acidic until alkaline soot from massive logging and burning early in this century neutralized the lakes' acidity.

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6. 20 ENV'T. REP. (BNA) 1779 (1990).
7. *Id.*
8. Timothy Stein, *Acid Rain: The Clean Air Act Cannot Handle the Problem*, 56 UMKC L. REV. 139, 142 (1987) (citing S. Postel, *Air Pollution, Acid Rain*, WORLD WATCH PAPER, N. 58, 28 (1984)).
9. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE 180, 181 (1987). *See also*, MCCORMICK, ACID EARTH: THE GLOBAL THREAT OF ACID POLLUTION 6 (1985).
10. Stein, *supra* note 8, at 143.
11. *Id.* at 140 (citing A. Labastille, *Acid Rain: How Great the Menace?* NATL. GEOGRAPHIC 653, 660, 670-71 (Nov. 1981)).
12. *Conservative Coalition Criticizes Air Bill*, 20 ENV'T. REP. (BNA) 2002 (1990).
13. *Id.*

> The lakes were then stocked with fish and were seen to be thriving. But now, he [says], they are returning to their normal, acidic state and acid is leaching into the lakes—but not from acid rain. Instead he point[s] to highly acidic, peaty forest floors through which water passes.[14]

If Krug is right, the acidification of the lakes in the Adirondack Mountains cannot be stopped by clean air legislation.

Scientists also disagree about the extent of the damage acid rain causes to materials such as buildings and statues. Some scientists claim that "acidic deposition is only one contributor to degradation of construction materials, [and that] such damage generally can be prevented by maintenance or other measures."[15] Uncertainty in this area makes cost-benefit analysis of acid rain prevention difficult at best, unreliable at worst.

With respect to the cost of acid rain prevention some have estimated that reducing sulfur dioxide (SO2) by fifty-five to sixty-five percent by the year 2000 from 1980 levels would cost from $4.6 billion to $6.7 billion per year.[16] However, J. Laurance Kulp, an environmental consultant and former head of the National Acid Precipitation Assessment Program disagrees. He claims that "acid rain reduction costs in [the Clean Air Act] could run to $100 billion over the next 10 years."[17] Considering the vast differences among experts, the controversy surrounding the NAPAP should come as no surprise.

A. *The NAPAP to the Rescue?*

In the spring of 1988, the NAPAP released an interim report concluding that "little further damage to forests and waterways would result from acid rain."[18] Within weeks, Kulp, former head of the NAPAP, resigned.[19] Members of Congress, environmentalists, and the Canadian government accused him of "watering down the report's conclusion and executive summary."[20] Kulp had "urged Congress to await the 10-

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14. *Id.*
15. *Acid Rain's Role in Lake, Stream Acidity*, 21 ENV'T. REP. (BNA) 844 (1990).
16. See *supra* note 9.
17. See 20 ENV'T. REP. (BNA) 2002 (1990).
18. *Id.*
19. *Id.*
20. *Id.*

year NAPAP final study" before passing new clean air legislation.[21] Edward Krug, soil scientist with Illinois State Water Survey, also urged Congress to wait.[22] Congress pushed through the Clean Air Act before the final study was released.

The new head of the NAPAP, James R. Mahoney, was subjected to similar treatment. Columnist Warren Brookes alleged that EPA Administrator William K. Reilly had forced Mahoney to change his congressional testimony on acid rain and that Mahoney had "cooked the books" on S02 emissions.[23] Brookes claimed that Mahoney wanted to tell Congress that "the effects of increased, decreased and constant [acid] deposition are not statistically significant."[24] Instead, Mahoney told Congress that "emission reductions would benefit aquatic resources and would mitigate other environmental effects."[25] In all, Brookes claimed that Mahoney made 19 rewrites in his report.[26] In a letter to Congressman John D. Dingell (D-Mich.), Mahoney denied the allegations.[27] Whether Brookes was right is now academic. In the end, Congress passed a comprehensive acid rain deposition reduction program and ignored $540 million worth of research.

Although Congress has ignored the results of its own study, there may be other uses for the NAPAP.

B. International Air Pollution and the NAPAP

Much of the acid rain which falls in eastern Canada has its origin in the United States. Section 115 of the Clean Air Act is designed to remedy that problem.[28] For section 115 to take effect, however, the EPA Administrator must find, based on scientific studies, that the public welfare of Canada is endangered by acid rain emitted from the United States. Courts could use the NAPAP as a basis for evaluating EPA's findings.

In *New York v. Thomas*[29] environmental groups tried to

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21. *Id.*
22. *Id.*
23. San Francisco Chronicle Dec. 6 (1989), p. 7/Z1.
24. *Id.*
25. *Id.*
26. *Id.*
27. *NAPAP Head Answers Allegations*, 20 ENV'T. REP. (BNA) 1646 (1990).
28. 42 U.S.C. § 7415 (1990).
29. 613 F. Supp. 1472 (D.D.C. 1985) rev'd by Thomas v. New York, 802 F.2d 1443 (D.C. Cir. 1986) rev'd by Her Majesty The Queen v. The Environmental Protection Agency, 912 F.2d 1525 (D.C. Cir. 1990).

compel the EPA to take action under section 115. However, they failed in part because the courts were reluctant to compel the EPA to act while the results of the NAPAP were still pending. Now the results are here and the NAPAP could play a major role in determining how the Clean Air Act is implemented.

1. The provisions of the Act

Section 115(a) of the Clean Air Act provides that:

> [w]henever the Administrator, upon receipt of reports, surveys or studies from any duly constituted international agency has reason to believe that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country . . . the Administrator shall give formal notification thereof to the Governor of the State in which such emissions originate.[30]

The Administrator's finding—that pollution emitted in the United States contributes to such air pollution—is referred to as an "endangerment finding."[31]

Under section 115(b), the notice to the governor of the state in which such emissions originate is deemed to be a finding that its State Implementation Plan ("SIP") under the Clean Air Act is inadequate and must be revised to the extent necessary "to prevent or eliminate the endangerment referred to in subsection (a)."[32] This process is referred to as an "SIP revision."[33]

The remedy provided by section 115 is applicable "only to a foreign country which the Administrator determines has given the United States essentially the same rights with respect to the prevention or control of air pollution occurring in that country as is given that country by this section."[34] This determination is known as a "reciprocity finding".[35]

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30. 42 U.S.C. § 7415(a) (1990).
31. 912 F.2d at 1528.
32. 42 U.S.C. § 7415(b) (1990).
33. 912 F.2d at 1538.
34. 42 U.S.C. § 7415(c) (1990).
35. 912 F.2d at 1538.

2. The EPA relies on the experts

In January 1981, shortly before the Reagan Administration took office, EPA Administrator Douglas M. Costle wrote two letters, one to Secretary of State Edmund Muskie and one to Senator George Mitchell.[36] In the letter to Secretary Muskie, Administrator Costle concluded that "acid deposition is endangering public welfare in the U.S. and Canada and that U.S. and Canadian sources contribute to the problem not only in the country where they are located but also in the neighboring country."[37] Administrator Costle's endangerment finding was based on the Seventh Annual Report on Great Lakes Water Quality issued by the International Joint Commission (IJC),[38] an organization established by the United States and Canada. The IJC is a "duly constituted international agency" for purposes of section 115(a).[39] Costle also concluded that there was reciprocation between the United States and Canada.[40] In his letter to Senator Mitchell, Costle stated that his conclusions on endangerment and reciprocity were "adequate to warrant the initiation of a section 115 based plan revision process in appropriate States" and that he had instructed his staff "to develop recommendations regarding the States which should receive formal notification."[41] All the elements appeared to be in place for compelling the EPA to take action.

3. The environmentalists take action

In 1984, several environmental groups, and private citizens filed suit under section 304(a)(2) of the Clean Air Act.[42] The groups claimed that Administrator Costle had made endangerment and reciprocity findings in 1981 and that the EPA was therefore required under section 115 to take action. The EPA argued, inter alia, that its decision to take action is discretionary because it "requires the fusion of technical knowledge and skills with judgment which is the hallmark of duties which are

36. New York v. Thomas, 613 F. Supp. 1472, 1486 (D.D.C. 1985).
37. *Id.* at 1488.
38. *Id.*
39. 912 F.2d at 1529.
40. 613 F. Supp. at 1488.
41. *Id.* at 1492.
42. 42 U.S.C. § 7604(a)(2) (1990).

discretionary."[43] The district court granted summary judgment for the plaintiffs holding that the letters constituted both endangerment and reciprocity findings under section 115 and that the EPA's decision to take action was nondiscretionary.

However, the court treated the binding effect of the reciprocity finding differently than that of the endangerment finding. The court stated that "a [reciprocity] finding under the statute must be based on an analysis of facts and law as they exist at a particular time and that a change of either facts or law might require reexamination of the determination."[44] The court then allowed the EPA to reassess Administrator Costle's reciprocity finding to "determine whether Costle's conclusion remains viable."[45] The court did not, however, allow the EPA to reassess Costle's endangerment finding but rather ordered the EPA to "give formal notification to the Governors of the states in which harmful emissions originate and to set in motion the necessary processes to require a plan revision so as to prevent or eliminate the endangerment encompassed by the Costle determinations."[46] Although not specifically stated, the court's reasoning for this distinction seems to rely more on Costle's letters than on the language of section 115.

In his letter, Costle stated that his reciprocity determination "could be changed should the U.S. conclude that future Canadian actions interpreting or implementing their legislation were not giving essentially the same rights to the U.S."[47] This statement by Costle, however, only supports the idea that reciprocity findings should be reassessed. It does not explain why an endangerment finding is binding on future EPA Administrators. Indeed, it would appear that the language of the statute requires the opposite result.

To make an endangerment finding the Administrator need only have "*reason to believe* that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country . . . ."[48] A reciprocity finding, on the other hand, requires the Administrator to "de-

43. 613 F. Supp. at 1485-86.
44. *Id.* at 1483.
45. *Id.* at. 1484.
46. *Id.* at 1486.
47. *Id.* at 1483.
48. 42 U.S.C. § 415(a) (1990).

termine" that reciprocity exists.[49] The court effectively ruled that the Administrator's determination can be reassessed but his beliefs are final. To disallow reassessment of the Administrator's endangerment finding, the basis of which was no more than a *reason to believe*, is unreasonable considering the debate over the effects of acid rain and the fact that the NAPAP was, at the time of the court's decision, in the middle of studying the problem. One might suspect that Judge Johnson, who wrote the opinion, had already decided that acid rain endangered the public welfare of Canada. Regardless of Judge Johnson's possible bias, her decision would have prevented the EPA from ever basing an endangerment finding on the NAPAP report. Costle's endangerment finding was final.

In *Thomas v. New York*,[50] the Court of Appeals for the District of Columbia reversed, but for different reasons. Judge Scalia, writing for the Court of Appeals, held that Administrator Costle's endangerment and reciprocity findings were "rules" under the Administrative Procedure Act[51] (APA) and therefore, could not be promulgated without notice and comment procedures.[52] Since the Costle findings had not been subjected to these procedures, they could not serve as the basis for judicial relief.[53] Scalia did not address the issue of whether the EPA was obliged to promulgate such findings, nor did he address their validity. In fact, Scalia concluded that "[h]ow and when the agency chooses to proceed to the stage of notification triggered by the findings is within the agency's discretion and not subject to judicial compulsion."[54] Scalia cited no authority for this conclusion. It appeared from Scalia's opinion that the EPA could not be compelled to act absent a showing of an abuse of discretion. The EPA would be free to look at any study, including the NAPAP, and ignore or accept Costle's findings. Although only dicta, this statement seemed to reverse Judge Johnson's decision to not allow reassessment of Costle's endangerment finding.

Undaunted, the petitioners next filed petitions for rulemaking with the EPA under section 553(e) of the APA,[55]

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49. 42 U.S.C. § 415(b) (1990).
50. 802 F.2d 1443 (D.C. Cir. 1986).
51. 5 U.S.C. § 551(4) (1988).
52. 613 F. Supp. at 1446-48.
53. *Id.*
54. *Id.* at 1448.
55. 5 U.S.C. § 553(e) (1988).

requesting that the EPA promulgate endangerment and reciprocity findings pursuant to section 115 of the Clean Air Act.[56] The petitioners asserted that four reports of duly constituted international agencies supported an endangerment finding, that the reciprocity requirements section 115(c) had been satisfied, and that Administrator Costle had specifically made both endangerment and reciprocity findings which had never been revoked by the EPA. The EPA declined to act on the petitions.

Eventually, Don R. Clay, Acting Assistant Administrator for Air and Radiation, responded in writing (insisting however that he was not speaking for the agency but only for himself). In his letter, Clay stated: "I do not believe that EPA presently has a sufficient information base to undertake the regulatory program required by section 115 . . . . For that reason, . . . I believe it would be premature to rule on your petition at this time."[57] In *Her Majesty the Queen v. United States Environmental Protection Agency*,[58] petitioners sought review of the Clay letters as final agency action denying their petitions for rulemaking. Petitioners asserted that the denial of their petitions for rulemaking was "arbitrary" and "capricious".[59] Petitioners believed that a decision in their favor would force the agency to act Costle's endangerment findings.

4. The Court's Holding

The holding of *Her Majesty* is best understood when divided into three parts. First, the court held that the Clay letters were final agency action regarding EPA's interpretation of the statute[60] and that EPA's interpretation was permissible.[61] Second, the letters were not final agency action regarding whether EPA had abused its discretion in denying the petitions for rulemaking given the "complexity of the technical and factual issues that the agency is required to address in this case."[62] Third, the EPA did not delay unreasonably in acting on Administrator Costle's findings given "the permissibility of the EPA's

56. Her Majesty The Queen v. EPA, 912 F.2d 1525 (D.C. Cir. 1990).
57. *Id.* at 1530.
58. *Id.* at 1525.
59. *Id.* at 1530.
60. *Id.* at 1531
61. *Id.* at 1533-34.
62. *Id.* at 1534.

[interpretation of section 115] . . . and the undisputed technical and scientific uncertainties that must be resolved in order to trigger section 115."[63]

5. The EPA's interpretation

Petitioners contended that section 115 is a two step process and that once step one has occurred (making the endangerment and reciprocity findings), step two (notifying the Governors of the respective states) must immediately follow. Petitioners' interpretation is consistent with the plain language of the statute which states "[w]henever the Administrator [makes endangerment and reciprocity findings] the Administrator shall give formal notification thereof to the Governor of the State in which such emissions originate."[64] Since four duly constituted international agencies supported an endangerment finding and reciprocity still existed, and since Administrator Costle had already made endangerment and reciprocity findings[65] the petitioners claimed the EPA was required to publish rules for notice and comment thereby initiating the remedial process established by section 115.[66]

The EPA interpreted the statute as a unitary or single step process that required not only endangerment and reciprocity findings but the EPA's ability to identify the polluting source. The EPA argued that "the Administrator must have sufficient evidence correlating the endangerment to sources of pollution within a particular State before he can exercise his discretion to make endangerment findings . . . ."[67] In other words, if the EPA does not know the source of the pollution, the EPA cannot notify the respective governors as the statute requires. The court agreed. The court held, inter alia, that:

> The statute thus creates a specific linkage between the endangerment finding and the remedial procedures: Once the endangerment finding is made, the SIP revision process *must* follow. As a result, if there is insufficient information to enable the Administrator to implement those remedies, the promulgation of an endangerment finding alone would largely

63. *Id.*
64. 42 U.S.C. § 7415(a) (1990).
65. 912 F.2d at 1530.
66. *Id.* at 1528.
67. *Id.* at 1533.

be pointless.[68]

As construed by the court, section 115(a) should now read: Whenever the Administrator . . . has reason to believe [that *identifiable* sources are contributing] to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country, [then notification of the respective Governors is required.] Apparently, Costle's findings were real findings, but their effect (requiring the EPA to notify the respective Governors) was suspended until the sources of the pollution could be identified.

However, this leaves unanswered the question of whether the EPA is permitted to reassess Costle's endangerment finding. The NAPAP was designed to "identify the causes and sources of acid rain, to evaluate its environmental, social, and economic effects, and to assess potential methods of control."[69] The results of the NAPAP could prove that Costle's endangerment findings were wrong. Nonetheless, the court held that there is a "specific linkage between the endangerment finding and the remedial procedures" and once the endangerment finding is made, the SIP revision process "must follow". The court seemed to be saying that the only ingredient lacking was sufficient "information to enable the Administrator to implement" section 115. It appeared that ten years and $540 million worth of research had been rendered useless by two letters from Administrator Costle.

a. The Clay letters were not final agency action regarding whether EPA abused its discretion in denying the petitions for rulemaking. Petitioners contended that there was enough evidence to constitute the necessary endangerment and reciprocity findings, that the findings had already been made by Administrator Costle, and that EPA's denial of their petitions for rule making constituted final agency action and an abuse of discretion. According to the court, "the agency [had] not made any final decision on whether endangerment and reciprocity findings [could] be made, nor [had] it conclusively determined whether it [could] adequately trace pollutants to specific sources in order to issue SIP revision notices."[70] From this statement the court appears to recognize the distinction between

68. *Id.*
69. *Id.* at 1535; *See also* 42 U.S.C. § 8903 (1990).
70. 912 F.2d at 1534.

"making an endangerment finding" and "identifying specific sources of pollution" and that the EPA had done neither. However, because the court recognized the EPA's unitary interpretation of the statute, the findings were interdependent and could not be made separately. True, Costle had already made endangerment and reciprocity findings, but they were ineffective until the EPA could identify the polluting sources. However, the court did not state whether the EPA could find that no endangerment was present thereby overruling Costle. The court only stated that the EPA had not yet made the finding.

b. The EPA did not delay unreasonably in acting on Administrator Costle's findings. The petitioners claimed that the EPA had "delayed unreasonably" in acting on Costle's findings. It had been nine years since Costle had made his endangerment finding and the EPA had not acted.[71] The Administrative Procedures Act requires that an agency "proceed to conclude a matter presented to it [within] a reasonable time."[72] Petitioners claimed that nine years of inaction was unreasonable.

The court held that the EPA had not delayed unreasonably in part because of the pending results of the NAPAP. After noting the "unusual complexity of the factors facing the agency in determining the effects of acid rain and in tracing the pollutants from the point of deposition back to their sources,"[73] the court stated:

> It was for the purpose, among others, of developing a better understanding of the acid rain phenomenon that Congress enacted the Acid Precipitation Act of 1980, 42 U.S.C. §§ 8901-8912 (1982).
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> [The program] is designed to identify the causes and sources of acid rain, to evaluate its environmental, social, and economic effects, and to assess potential methods of control. *See* 42 U.S.C. section 8903 . . . . At oral argument the EPA pointed to this study as evidence of specific research being conducted that could enable the agency to take action under section 115; the EPA also asserted that the report should provide it with a sufficient basis to make a reasoned decision on the petitioners' rulemaking petitions.
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> It is in part on the basis of this information that we con-

71. *Id.*
72. 5 U.S.C § 555(b) (1988).
73. 912 F.2d at 1534.

> clude that the EPA's delay in acting on the petitions has been neither arbitrary, nor capricious, nor contrary to law.[74]

This statement has tremendous potential. For example, the phrase "to evaluate its environmental, social, and economic, effects" might mean the EPA could use the NAPAP to reassess Costle's endangerment finding. However, the phrase "could enable the agency to take action under section 115" implies the NAPAP will simply enable the EPA to identify the sources of pollution. It is unclear what the status of the Costle endangerment finding is. Only the judges know for sure.

Congress spent $500 million to identify the causes and effects of acid rain. The EPA could try to use the NAPAP to over rule Costle's endangerment finding, courts permitting. Or it could find the results inconclusive and proceed to act once the sources of pollution are identified. The decision would seem to depend on the administrator and who he or she wants to believe: Congress' $500 million study or the environmentalists.

III. National Ambient Air Quality Standards and the NAPAP

Acid rain is caused by SO2 and water vapor. SO2 is one of the pollutants for which the EPA is required to establish National Ambient Air Quality Standards (NAAQS). In establishing those standards, the EPA is to "take into account all the relevant studies revealed in the record" and "make an informed judgment based on available evidence."[75] The NAPAP is the most recent study regarding the effects of SO2 on the environment and could be used to challenge the NAAQS for SO2 as established by the EPA.

To date, the EPA's standards for SO2 have yet to be challenged. However, in *Natural Resources Defense Counsel v. EPA*,[76] petitioners did challenge EPA's selection of primary and secondary NAAQS for PM10. Although the pollutant is different, the procedure for challenging the NAAQS is the same. This case provides a useful analogy as to what role the NAPAP might play in challenging NAAQS for SO2.

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74. *Id.* at 1534-35.

75. American Petroleum Inst. v. Costle, 665 F.2d 1176, 1187 (D.C. Cir. 1981), *cert. denied*, 455 U.S. 1034 (1982).

76. 902 F.2d 962 (D.C.Cir. 1990).

A. The Provisions of the Act

Under section 108 of the Act, the EPA is to identify air pollutants that are emitted from "numerous or divers" sources and whose presence in the ambient air "may reasonably be anticipated to endanger public health or welfare."[77] The EPA has identified SO2 as one of those pollutants.[78]

For each pollutant, the EPA is required to issue a "criteria" document reflecting its health and welfare effects and a "control techniques" document discussing the costs and benefits of different types of emission controls.[79] The criteria document, which serves as the basis for establishing the pollutant levels, must "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health . . . which may be expected from the presence [of particulate matter] in the ambient air, in varying quantities."[80] The NAPAP could be regarded as "the latest scientific knowledge" regarding the effects of SO2 and NO, the prime ingredients in acid rain.

Under section 109, the EPA must issue "primary" and "secondary" NAAQS for each pollutant identified under section 108.[81] The primary standards must protect the public health while allowing an adequate margin for safety; the secondary standards must protect the public welfare from any known or anticipated adverse effects.[82] Under the Clean Air Act, all language which refers to the effects on "public welfare" includes, but is not limited to "effects on soils, water, crops, vegetation, manmade material, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being."[83] In setting a standard under section 109, the Administrator must "take into account all the relevant studies revealed in the record" and "make an informed judgment based on available evidence."[84] The NAPAP

77. 42 U.S.C § 7408(a)(1) (1990).
78. 40 C.F.R. 50.4 (1990).
79. 42 U.S.C § 7408(a)(2), (b)(1) (1990).
80. 42 U.S.C § 7408(a)(2) (1990).
81. 42 U.S.C. § 7409(a)(2) (1990).
82. 42 U.S.C. § 7409(b) (1990).
83. 42 U.S.C. § 7602(h) (1990).
84. American Petroleum Inst. v. Costle, 665 F.2d 1176, 1187 (D.C. Cir. 1981), *cert. denied*, 455 U.S. 1034 (1982).

is such a study.

B. The EPA Sets the Standard.

In 1986, the Environmental Criteria and Assessment Office reviewed scientific studies on the health effects of PM10.[85] Based on these studies, the EPA's Office of Air Quality Planning and Standards recommended that the Administrator consider a twenty four hour standard at levels between 140 µg/m3 to 250 µg/m3 and annual standards at levels between 40 µg/m3 to 65 µg/m3.[86] On July 1, 1987, after a lengthy notice and comment period and the issuance of several supplemental proposals, the EPA issued the final rule revising the NAAQS for particulate matter.[87] The EPA selected 50 µg/m3 as the annual standard and 150 µg/m3 as the 24-hour primary standards for PM10.[88]

In December 1988, the EPA denied petitions for reconsideration of various aspects of the revised primary and secondary standards for PM10.[89] In *Natural Resources,*[90] the petitioners appealed claiming the Administrator's selection of the twenty-four hour and annual national primary ambient air quality standards for particulate matter, measured in PM10 was arbitrary and capricious and sought to have them revised.[91]

1. The petitioners' argument

The petitioners claimed that the Administrator's selection of the standards was arbitrary "because he provided no basis for distinguishing the health effects associated with the levels selected from those associated with the levels rejected."[92] Petitioners asserted that the "only reliable scientific evidence shows that standards at the highest levels proposed [250 µg/m3] would still protect the public health, including sensitive subgroups of the population, with an adequate margin of safety."[93] Petitioners believed that the levels selected were too

85. Natural Resources Defense Consel v. EPA, 902 F.2d 962, 968 (D.C. Cir. 1990).
86. *Id.*
87. *See* 52 Fed. Reg. 24,643-45 (1990).
88. *Id.* at 24,641-45.
89. 665 F.2d at 967.
90. 902 F.2d 962.
91. *Id.* at 967.
92. *Id.* at 968.
93. *Id.* (quoting Brief *amicus curie* of the American Iron and Steel Institute at

low and that the EPA had ignored certain studies. The studies showed that a standard of 250 µg/m3 rather than 150 µg/m3 would be "well below the levels where a scientific consensus accepts pollution as responsible for some unknown amount of life shortening among the elderly and persons with pre-existing respiratory or cardiac disease."[94]

2. The EPA's argument

The EPA acknowledged that the Lawther study indicated that a PM10 standard of 25O µg/m3 might contain some margin of safety and that the London Mortality study indicated that 250 µg/m3 would be "well below" the pollution levels that produced "excess mortality" in London. However, the EPA concluded that because other studies indicated adverse health effects below 250 µg/m3, and because of differences between the United States and London in particulate composition, and because of difficulties in converting from British Smoke (the indicator for particulate matter used in the London and Lawther studies) to PM10 measurements, those studies could not be relied upon exclusively.[95]

In issuing the final rule which established the NAAQS, the Administrator concluded that a twenty-four hour PM10 standard greater than 150 µg/m3 would "present an unacceptable risk of premature mortality" and allow the possibility of significant lung function changes.[96]

3. The standard of review

The court stated that in reviewing the agency's determination it "must carefully review the record to ascertain that the agency has made a reasoned decision based on 'reasonable extrapolations from some reliable evidence.'"[97] This standard goes farther than simply requiring the Administrator to "consider" or "take into account" all of the available studies. The

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20, *Natural Resources* 902 F.2d at 968).

94. *Id.* at 969 (citing Lawther, Waller & Henderson, *Air Pollution and Exacerbations of Bronchitis*, 25 THORAX 525 (1970); Martin & Bradly, *Mortality, Fog and Atmospheric Pollution—An Investigation During the Winter of 1958-59*, 19 MONTHLY BULL. MINISTRY HEALTH LAB. SERV. 56 (1960); Martin, *Mortality and Morbidity Statistics and Air Pollution*, 57 PROC. ROYAL SOC'Y MED. 969 (1964)).

95. *See* 52 Fed. Reg. at 24,643 (1990).

96. *Id.*

97. 902 F.2d at 968 (quoting National Resources Defense Council v. Thomas, 805 F.2d 410, 432 (D.C. Cir. 1986)).

standard requires that the decision be a "reasoned" one based on "reasonable extrapolations". This requires a substantive rather than procedural review of the Administrator's decision. Although not articulated by the court, the reason for this high level of scrutiny is probably because the criteria document, which serves as the basis for establishing the pollutant levels, must "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health . . . which may be expected from the presence [of particulate matter] in the ambient air, in varying quantities."[98] The reviewing judge, therefore, must determine the accuracy of the Administrators decision. This constitutes a higher standard of review when compared to the abuse of discretion standard employed by the court in *Her Majesty the Queen*.[99]

4. The court's holding

The court held that the EPA's selection of the twenty-four hour standard was reasonable in light of the conflicting studies and the agency's mandate to provide an adequate margin of safety.[100] However, as required by the standard of review, the court did not leave EPA free to arbitrarily choose the various levels.

While noting that the decision of the Administrator "did not spring from a bounty of definitive research,"[101] the court held that such is not required. The court stated, that "[t]he Administrator is required to provide an adequate margin of safety. And '[i]n setting margins of safety the Administrator need not regulate only the known dangers to health, but may 'err' on the side of overprotection by setting a fully adequate margin of safety.'"[102] This statement implies that regulating unknown dangers in the name of overprotection is required for the margin of safety to be fully adequate. This also seems to contradict the standard of review employed by the court. Under that standard, the Administrator's decision must be based on

98. 42 U.S.C § 7408(a)(2) (1990).
99. 912 F.2d 1525.
100. 902 F.2d at 969.
101. 902 F.2d at 972.
102. *Id.* at 968 (quoting American Petroleum Inst. v. Costle, 665 F.2d 1186, 1186 (D.C. Cir. 1981), *cert. denied*, 455 U.S. 1034, (1982)).

"reasonable extrapolations from some reliable evidence",[103] and that evidence is contained in the criteria document which must "accurately reflect the latest scientific knowledge".[104] There seems little room for regulating unknown dangers. Nonetheless, the court grants the EPA the power.

The NAPAP might be used by industry to challenge NAAQS for SO2. However, the success of the challenge will probably rely not on the standard of review or on the statutory requirements but on whether the judge believes that regulating unknown dangers in the name of overprotection is required to provide a fully adequate margin of safety. The political predilections of judges and of the EPA are much more crucial than the results of scientific studies.

IV. CLEAN AIR ACT TO THE RESCUE?

In 1990, Congress passed legislation amending the Clean Air Act. The amendments leave in place the provisions concerning International Air Pollution and National Ambient Air Quality Standards discussed above. However, as part of that legislation, Congress enacted the Acid Deposition Control program (ADC).[105] The ADC is much more specific in its instruction to the EPA regarding the control of acid rain through the reduction of SO2 emissions. In fact, the EPA is given no discretion regarding the dangers of acid rain.

Despite the controversy over the effects of acid rain, the Congress found that "the presence of acidic compounds and their precursors in the atmosphere and in deposition from the atmosphere represents a threat to natural resources, ecosystems, materials, visibility, and public health."[106] How Congress made this finding is not stated in the amendments to the Clean Air Act, and it would appear that this finding directly contradicts the results of the NAPAP. Congress should have said it "declares" rather that it "finds".

Why Congress chose to ignore the results of the NAPAP in amending the Clean Air Act is not clear. It could be that Congress does not trust the EPA to protect the environment. It could be that Congress does not trust the courts to protect the environment. It could be that reducing acid rain and SO2 emis-

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103. 902 F.2d at 968.
104. *Id.*
105. The Clean Air Act Title IV.
106. *Id.* at § 401.

sions is just the politically expedient thing to do. It could be that environmental groups have a very powerful lobby and enough money to purchase the necessary influence to get their agenda through Congress. Or it could be all of the above. Whatever the reasons, the controversy continues despite the $500 million NAPAP study.

According to Gene E. Likens, Director of the Institute of Ecosystems Studies in Millbrook, New York, "it appears that the acid rain remedy adopted by Congress . . . is too little too late."[107] Mr. Likens' "findings" indicate that "the reductions in emissions of sulfur dioxide and nitrogen oxides mandated by the 1990 amendments are far less than what would be required to protect sensitive ecosystems from continuing damage from acidic rain, snow, fog and dust."[108] Likens claims that the new protections are inadequate because "[t]hey were not scientifically based; they were chosen on political and economic grounds."[109]

Of course, not everyone agrees with Mr. Likens. "A spokesperson for the Edison Electric Institute, an association of the electric utilities that must bear the brunt of emissions control requirements, said that 'nothing in the NAPAP report supports [Likens's analysis].'"[110] The spokesperson asked not to be identified. James Mahoney, the former director of NAPAP, added, "I don't hear [Likens's] scientific colleagues arguing that the reductions were not enough."[111]

The usefulness of the NAPAP study is now unclear. Although it might be used to challenge endangerment findings under section 115 of the Clean Air Act, or to challenge NAAQS as promulgated by the EPA under section 108, the courts might be prompted to ignore it; after all, Congress ignored it in passing the Clean Air Act. Yet Congress hasn't lost all confidence in the NAPAP. Congress recently assigned the NAPAP to monitor the effectiveness of the new Clean Air Act controls.[112] If the NAPAP has been unable to identify the causes and effects of acid rain, its ability to monitor the effectiveness of the new acid

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107. Philip Shabecoff, *Acid Rain: Are the Remedies Adequate to the Problem*, American Political Network, Inc. Greenwire, Dec. 16, 1991.
108. *Id.*
109. *Id.*
110. *Id.*
111. *Id.*
112. *Acid Rain Program Shifts Gears to Study Effectiveness of Air Act SO2 Limits*, INTERNATIONAL ENVIRONMENT DAILY, (BNA), Jan. 16, 1992.

rain controls is doubtful. Maybe Congress should create a program to monitor the effectiveness of the NAPAP. They could call it the National Acid Precipitation Assessment Program.

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