Pace Environmental Law Review

Volume 2
Issue 1 *1984*

Article 7

September 1984

Foundation on Economic Trends v. Heckler: Genetic Engineering and NEPA's EIS Requirement

Elizabeth Pizzulli

Foundation on Economic Trends v. Heckler: Genetic Engineering and NEPA's EIS Requirement

I. Introduction

Until recently, genetic experiments involving recombinant DNA research have been confined to the research laboratory.[1] In 1983, the National Institutes of Health (NIH), in a decision aided by its Recombinant Advisory Committee (RAC), approved the third of three proposals for the deliberate release of genetically altered materials into the environment. Subsequently, a suit headed by Jeremy Rifkin of the Foundation on Economic Trends was brought against federal officials responsible for the supervision of scientific research conducted at or by NIH.[2] Plaintiffs alleged that when NIH made several decisions associated with genetic experimentation, it violated the National Environmental Policy Act of 1969 (NEPA)[3] and the Administrative Procedure Act (APA).[4]

On May 16, 1984, Judge Sirica of the D.C. District Court in *Foundation on Economic Trends v. Heckler (Heckler I)*,[5] granted a motion for a preliminary injunction enjoining deliberate release experimentation.[6] The injunction halted the most imminently scheduled deliberate release experiment[7] as

---

1. Foundation on Economic Trends v. Heckler (Heckler I), 587 F. Supp. 753, 755 (D.D.C. 1984), *aff'd*, 756 F.2d 143 (D.C. Cir. 1985).

2. *Heckler I*, 587 F. Supp. at 754.

3. 42 U.S.C. §§ 4321-4370 (1982)

4. 5 U.S.C. § 706 (1982).

5. 587 F. Supp. at 753.

6. *Id.* at 769. The injunction specifically halted, *inter alia*, the commencement of a potato-crop experiment to be conducted by scientists at the University of California at Berkeley. The experiment involves the application of genetically altered bacteria to a crop of potatoes to help make them frost resistant. *Id.* at 753.

7. Besides the potato-crop experiment which is the subject of this litigation, two others were approved by NIH. One was a field test of genetically modified corn plants to be conducted by Dr. Ronald Davis of Stanford University and the other was a field

well as the approval of any proposals for similar experimentation until a final judgment on the merits of the alleged NEPA and APA violations is reached.

On February 27, 1985, Judge Wright of the D.C. Circuit Court of Appeals upheld the part of Judge Sirica's preliminary injunction that enjoined the individual deliberate release experiment, ruling that "NIH has not yet displayed the rigorous attention to environmental concerns demanded by law."[8] According to the court, until an appropriate environmental assessment is completed, release of the modified bacteria is prohibited.[9] However, the part of the preliminary injunction that enjoined NIH from approving any similar experiments was vacated because of its extreme broadness.[10]

This Note discusses whether NEPA is applicable to the deliberate release experimentation that is the subject of Rifkin's pending suit, the need for its proper implementation, and the potential impact of NEPA on the field of genetic engineering. The conclusion is that NEPA should be applied only to NIH's decision to approve the individual deliberate release experiment, should not be applied to mere administrative decisions, and if complied with, should not hinder advances in scientific technology unless possible environmental dangers exist.

II. Background

A. *Genetic Engineering*

Genetic engineering involves the splitting, rearranging, and recombining of a subcellular unit known as deoxy-

---

test of genetically modified tomato and tobacco plants to be conducted by Dr. John Sanford of Cornell University. Both experiments, however, were abandoned due to feasibility problems. Foundation on Economic Trends v. Heckler (Heckler II), 756 F.2d 143, 150 (D.C. Cir. 1985).

8. *Heckler II*, 756 F.2d at 146.

9. *Id.* NIH finally released a 60-page Environmental Assessment declaring a negative impact on the environment in early February. *NIH Director Rules Out Environmental Hazard in Altered Ice-Minus Microbe*, Biotech. Newswatch, Feb. 4, 1985 at 3. The February 27 court of appeals decision, however, was not based on this Environmental Assessment since the appeal was argued on December 5, 1984.

10. *Heckler II*, 756 F.2d at 146.

ribonucleic acid (DNA). The product of this process, known as "recombinant DNA," is used by scientists to control the natural processes of organism reproduction, metabolism, and growth.[11]

More specifically, recombinant DNA involves gene cloning, a process which essentially produces an unlimited number of identical organisms. A gene—the hereditary determinant in a living organism—may be inserted into a bacterial cell, for example, and is then reproduced along with the host cell. The gene and the bacterium are thus cloned simultaneously.[12] Alternatively, a selected segment of DNA may be deleted, leading to organisms lacking or defective in one or more genes.[13]

Advancement in the field of genetic engineering has progressed so rapidly that many such newly created organisms are ready for use outside of the research laboratory.[14] For example, bacteria have been designed that can prevent frost damage to crops, provide a biological means of pest control, or digest toxic chemicals. Crop plants have been designed with improved nitrogen fixation capabilities or resistance to drought, disease, or herbicides.[15] Other experiments involve modifying crops so that they will produce more nutritious proteins and provide some of their own fertilizer. Vaccines against diseases that attack livestock are being produced by biologists. Someday geneticists hope to engineer finer animals.[16] With the world's population at nearly five billion and quickly multiplying,[17] the benefits of genetic engineering in

---

11. *Heckler I*, 587 F. Supp. 753, 755 (D.D.C. 1984), *aff'd*, 756 F.2d 143 (D.C. Cir. 1985).

12. Weaver, *Beyond Supermouse: Changing Life's Genetic Blueprint*, 166 Nat'l Geographic 818, 820 (1984).

13. In non-scientific terms, the underlying concept of gene cloning has been described as "cutting a printed page in half, inserting a new paragraph in the middle, and photocopying the altered version over and over to reproduce the new material along with the old." *Id.* at 820. Similarly, an existing paragraph may be deleted and the page subsequently reproduced. The result is the creation of organisms that contain new genetic information.

14. Baum, *Genetic Engineering Engulfed in New Environmental Debate*, Chem.& Eng'g News, Aug. 13, 1984 at 15.

15. *Id.*

16. Weaver, *supra* note 12, at 818.

17. *Id.*

the areas of agriculture and livestock appear promising.

Genetic engineering has made its mark in the field of medicine as well. One molecular geneticist has commented that "[b]iotechnology promises aid for millions of people who suffer from diabetes and for thousands of youngsters afflicted with dwarfism. Deadly human ailments including heart disease and cancer are beginning to yield to biotechnology's weapons. So, too, may intractable genetic disorders such as sickle-cell anemia."[18]

It is also anticipated that genetically altered bacteria may be employed in the area of energy resources. One plan is to extract petroleum from spent wells[19] —a potentially fertile source of this nation's energy. As much as 200 billion barrels of oil, worth trillions of dollars, may be trapped under the United States alone.[20]

B. *The Berkeley Potato-Crop Experiment*

The deliberate release experiment halted by the Rifkin suit was a potato-crop experiment to be conducted by scientists from the University of California at Berkeley. This experiment, which was to begin on or about May 25, 1984, involves the application of genetically-altered bacteria onto a row of potatoes in northern California. The desired effect is to make the plants more frost tolerant and thereby reduce the risk of frost damage.[21] The experiment, designed by plant pathologist Dr. Steven E. Lindow, involves the deletion of a gene from a strain of bacterium called *Pseudomonas syringae*.[22] Normal *Pseudomonas syringae* produces a protein which acts as a center for ice formation or nucleation. This protein plays a critical role in the formation of ice crystals on plant surfaces at temperatures between zero and minus seven

18. *Id.*

19. *Id.* at 841.

20. *Id.*

21. *Heckler I*, 587 F. Supp. at 755-56. On appeal, the court noted that the bacteria would also be applied to plots of tomatoes and beans. *Heckler II*, 756 F.2d 143-150 (D.C. Cir. 1985).

22. Baum, *supra* note 14, at 15-16.

degrees Celsius.[23] Lindow and his colleagues located the gene that codes for the ice-nucleating protein, deleted a segment of it, and then cloned the organisms with the defective gene. The cloned organisms cannot code for functional protein and are incapable of ice nucleation.[24] The proposed field tests were designed to examine the interaction of various strains of ice-minus *Pseudomonas syringae* with natural populations of the bacterium.[25]

C. *The NIH Guidelines*

In response to fears in the early 1970's concerning laboratory recombinant DNA experiments using *Escherichia coli*, a common intestinal bacterium, scientists involved in recombinant DNA research developed the NIH guidelines to regulate such experiments.[26] A review of the questions posed by the possibility of genetic engineering was first made at the 1975 Asilomar Conference in California.[27] RAC, which is composed primarily of eminent scientists in the field of recombinant DNA research,[28] had been created a few months prior to the Asilomar Conference to advise the director of NIH[29] on recombinant DNA research questions. After the conference, RAC drafted a comprehensive and detailed set of guidelines.[30] Their purpose was to prevent the escape of modified organisms from the research laboratory, and if they should escape, to guarantee that they could not survive.[31]

---

23. *Id.* at 18.

24. The reverse of this process is used by ski resorts to improve their snowmaking capabilities. *See generally Ice-Plus Strains Make Snow for Ski-Resort Operators*, Biotech. Newswatch, Dec. 19, 1983 at 8.

25. Baum, *supra* note 14, at 18.

26. *Id.* at 15.

27. *Heckler II*, 756 F.2d at 148.

28. *Heckler I*, 587 F. Supp. at 755.

29. NIH is a federal agency whose legal authority (the NIH recombinant DNA research guidelines) extends to all federally funded recombinant DNA research. Hanson, *Government Readies Rules for Biotechnology Control*, Chem. & Eng'g News, Aug. 13, 1984 at 35. However, since NIH is not a regulatory agency, it can enforce the guidelines only by withholding or threatening to withhold financial support. *Research Guidelines Lead to Legal Entanglement*, Chem. & Eng'g News, Aug. 13, 1984 at 16.

30. *Id.* at 16.

31. Baum, *supra* note 14, at 15.

When issued in July, 1976, the guidelines prohibited five categories of experiments, including an absolute ban on deliberate release experiments using recombinant DNA.[32] Based on new scientific knowledge, substantial modification of the NIH guidelines occurred in 1978, 1982, and 1983.[33] The most controversial change occurred in 1978, allowing the director of NIH, with the advice of RAC, to exempt experiments from the blanket prohibitions contained in the 1976 guidelines on a case-by-case basis. The first proposed deliberate release experiment to be approved was presented in 1981.[34]

D. *The Rifkin Suit*

In September 1983, Rifkin headed a group of plaintiffs who filed suit to enjoin the NIH-approved Berkeley potato-crop experiment and to block NIH approval of any other deliberate release experiments.[35] The plaintiffs alleged that several actions undertaken by NIH each required the issuance under NEPA of an Environmental Impact Statement (EIS), or at the minimum, an Environmental Assessment (EA) indicating a finding of no significant environmental impact.[36]

The first action taken by NIH was the 1978 modification of the NIH Guidelines which permitted NIH to exempt deliberate release experiments on a case-by-case basis from the absolute ban. Although an EA declaring a negative impact accompanied this decision, plaintiffs contend that a full EIS should have been prepared.[37] The district court agreed,[38] and partially due to this finding, ordered a preliminary injunction halting the approved deliberate release experiment and the further approval of any similar experimentation. However, the court of appeals vacated this part of this decision, concluding that it was not a sufficient basis for the preliminary injunction

---

32. Recombinant DNA Research Guidelines, 41 Fed. Reg. 27,911, 27,914-15 (1976).

33. *Heckler I*, 587 F. Supp. at 758.

34. *Heckler II*, 756 F.2d at 150.

35. *Heckler II*, 756 F.2d at 146.

36. *Heckler I*, 587 F. Supp. at 757.

37. *Id.* at 761.

38. *Id.* at 762.

ordered.[39]

Plaintiffs also contend that a programmatic EIS (PEIS) should have been prepared in 1982 when NIH began to generally review and approve deliberate release experiments.[40] Again the district court agreed with plaintiffs' contentions, but the court of appeals disagreed and vacated the part of the preliminary injunction which halted the further approval of deliberate release experiments.[41]

The third action taken by NIH was the approval of the Berkeley potato-crop experiment without conducting an environmental assessment and preparing an EA or EIS.[42] On this point, both courts agreed that NIH had failed to adequately assess the need for an EIS under NEPA; the preliminary injunction halting the scheduled potato-crop experiment was therefore affirmed by the court of appeals. The preliminary injunction is still in effect pending a final determination on the issues of the NEPA and APA violations.

III. NEPA

A. *Application of NEPA*

NEPA is comprised of three major sections. The first,

---

39. *Heckler II*, 756 F.2d at 158-59.

40. *Heckler I*, 587 F. Supp. at 763.

41. *Heckler II*, 756 F.2d at 159-60. Although the district court's decision to temporarily halt all deliberate release experiments specifically exempted private research companies that had voluntarily followed the NIH guidelines and had deliberate release experiments reviewed by RAC (Baum, *supra* note 14, at 16), Rifkin filed a motion in late July 1984, which, if granted, would have made the NIH guidelines mandatory for most industrial experiments as well. Krieger, *Genetic Engineering Report*, Chem. & Eng'g News, Aug. 13, 1984 at 12. In support of this motion, Rifkin contended that:

> Any firm that is a licensee under the patent held by Stanford University and the University of California on research done by Stanley N. Cohen and Herbert W. Boyer is compelled to comply with the NIH guidelines under a clause in the licensing agreement.

Baum, *supra* note 14, at 17. He therefore argued that until NIH compiles an EIS, industrial deliberate release experiments must be halted. Practically all firms engaged in genetic engineering research are licensed under the Cohen-Boyer patent. *Id.* However, because the court of appeals vacated the preliminary injunction that halted approval of all deliberate release experiments, Rifkin's above contention becomes moot.

42. *Heckler I*, 587 F. Supp. at 757.

section 101,[43] establishes a series of national and governmental goals for environmental quality. The second, section 102, requires the preparation by responsible federal officials of an EIS which is to be included in "every recommendation or report on proposals for legislation and other major [f]ederal actions significantly affecting the quality of the human environment."[44] The third, section 202,[45] creates the President's Council on Environmental Quality (CEQ).[46]

Section 102(2)(C), which is the action-enforcing section,[47] is the subject of the Rifkin suit. It is the controversy over the interpretation of this section that has temporarily halted the approved deliberate-release experiment.

When determining whether an EIS is required under section 102(2)(C) of NEPA, the legislative intent behind the entire statute must first be considered. According to the congressional declaration, NEPA's purpose is to

> [D]eclare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which prevent or eliminate damage to the environment and biosphere and stimulate

---

43. 42 U.S.C. § 4331 (1982).

44. *Id.* at § 4332.

45. *Id.* at § 4341.

46. G.C. Coggins & C.F. Wilkinson, Federal Public Land and Resources Law 261 (1981). The Council on Environmental Quality is the agency created by NEPA to oversee implementation of the statute and to interpret its meaning. CEQ's interpretation of NEPA is embodied in the CEQ Guidelines, codified at 40 C.F.R. §§ 1500-1517 (1984).

47. Section 102(2)(C) states in relevant part that:

> The Congress authorizes and directs that, to the fullest extent possible: . . . (2) all agencies of the [f]ederal Government shall— . . . (C) include in every recommendation or report on proposals for legislation and other major [f]ederal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—(i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposed action, (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

42 U.S.C. § 4332(2)(C) (1982).

> the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.[48]

The purpose of section 102(2)(C) in particular was best summarized by the Supreme Court in *Aberdeen & Rockfish Railroad Co. v. Students Challenging Regulatory Procedures (SCRAP)*.[49] The Court stated that NEPA created a distinct procedural obligation on federal agencies to provide written consideration of the environmental issues associated with certain major federal actions. The effect of this affirmative obligation is to create a "right of action in adversely affected parties to enforce that obligation."[50]

A second but crucial purpose of this section is to provide a source of information for the public and other parts of government concerning agency decisionmaking.[51] Finally, section 102(2)(C) serves to provide an affirmative environmental record for review in the event a determination as to the adequacy of an agency's decision need be made.[52]

1. *Federal Action*

Under the language of the statute, the first threshold an agency must cross when determining the applicability of NEPA to proposals is whether the proposed action[53] is indeed "[f]ederal."[54] Although the term was not defined by Congress when the statute was enacted, one NEPA commentator has

---

48. *Id.* at § 4321.

49. 422 U.S. 289 (1975).

50. *Id.* at 319.

51. Jones v. District of Columbia Redev. Land Agency, 499 F.2d 502, 511 (D.C. Cir. 1974), *cert. denied*, 423 U.S. 937 (1975).

52. McGarity, *The Courts, the Agencies, and NEPA Threshold Issues*, 55 Tex. L. Rev. 801, 805 (1977).

53. There are four types of major federal action that require either an EA or an EIS. The first is "single actions" (which include site-specific actions); the second is "connected actions" (often called programmatic action); the third is "cumulative actions," and the fourth is "similar actions" (which also provide a basis for programmatic action). 40 C.F.R. § 1508.25 (1984).

54. McGarity, *supra* note 52, at 837.

concluded that Congress intended the phrase "[f]ederal action" to be broadly inclusive, applying to virtually every entity exercising the executive authority of the United States Government.[55]

The court in *Scientists' Institute for Public Information v. Atomic Energy Commission (SIPI)*[56] also makes clear that federal action within the meaning of the statute not only applies when an agency initiates an action itself, but also when an agency by its decision permits an action by other parties which will have an impact on the environment.[57] The CEQ Guidelines,[58] which are binding on all federal agencies,[59] also adopted this view.[60]

2. *Major Federal Action*

Once it is established that the actions taken by NIH are federal, the second threshold that must be overcome by federal agencies is the determination of whether the projects are "major" as well. *Simmans v. Grant*[61] held that this determination relies on an inquiry into whether the federal action is the "precipitating cause of the resultant impact, regardless of who or what may actually have caused the impact."[62] Simply, if "but for" the particular federal action the impact would not have occurred, the federal action may be classified as major. This interpretation, however, does not consider whether the effect of the federal action itself is major.

Prior to *Simmans*, the court in *Natural Resources Defense Council, Inc. v. Grant (NRDC)*[63] classified a major federal action as one that requires a substantial amount of plan-

---

55. *Id.* at 838.

56. 481 F.2d 1079 (D.C. Cir. 1973).

57. *Id.* at 1088.

58. The CEQ Guidelines first became effective on July 30, 1979. 40 C.F.R. § 1506.12 (1984).

59. *Id.* at § 1500.3.

60. *Id.* at § 1508.18(b)(4).

61. 370 F. Supp. 5 (S.D. Tex. 1974).

62. *Id.* at 14.

63. 341 F. Supp. 356 (E.D.N.C. 1972).

ning, time, resources, or expenditures.[64] *Natural Resources*, however, involved federally initiated action to contract for and construct a watershed project which was partially federally funded.[65] In the absence of entrepreneurial federal action, it has been noted that the courts for the most part have classified the action as major without explanation.[66]

Contrary to *Simmans* and *NRDC*, the CEQ Guidelines state that " '[m]ajor [f]ederal action' includes actions with effects that may be major and which are potentially subject to federal control and responsibility. *Major* reinforces but does not have a meaning independent of *significantly*. . . ."[67] This interpretation diminishes the importance of the term "major" as it stands independently, and conditions satisfaction of the requirement on the third part of the NEPA analysis. Since CEQ's Guidelines are the binding authority on federal agencies for the interpretation of NEPA and are the agency's own interpretation of the statute, this interpretation should be given substantial deference.[68]

---

64. *Id.* at 366-67.

65. *Id.* at 356-57, 361.

66. McGarity, *supra* note 52, at 842-45.

67. 40 C.F.R. at § 1508.18.

68. Although these guidelines do not have the force of law, they have consistently been regarded with great deference when courts have been faced with problems of statutory construction. *See Environmental Defense Fund v. T.V.A.*, 468 F.2d 1164, 1178 (6th Cir. 1972); *Carolina Action v. Simon*, 389 F. Supp. 1244, 1246-47 (M.D.N.C.), *aff'd*, 552 F.2d 295 (4th Cir. 1975).

CEQ is the agency "ultimately responsible for administration of NEPA and most familiar with its requirements." CEQ's interpretation of NEPA "is entitled to great weight." *Warm Springs Dam Task Force v. Gribble*, 417 U.S. 1301, 1310 (1974) (Douglas, J. Circuit Justice).

Although CEQ was created by NEPA, it derives its authority to issue guidelines on EIS preparation not from the statute but from Exec. Order No. 11,514. The order was issued "in furtherance of the purpose and policy of" NEPA. It gives CEQ the power to "[i]ssue guidelines to federal agencies for the preparation of detailed statements on proposals for legislation and other federal actions affecting the environment, as required by section 102(2)(C) of [NEPA]." 3 C.F.R. 271, 272 § 3(h) (1974). *See* Comment, *The Council on Environmental Quality's Guidelines and their Influence on the National Environmental Policy Act*, 23 Cath. U.L. Rev. 547 (1974).

3. *Major Federal Action Significantly Affecting the Quality of the Human Environment*

The third and final threshold that must be crossed when determining the applicability of NEPA to a particular major federal action is whether or not such action "significantly" affects the quality of the human environment. It is this requirement that is the most difficult to evaluate because of the many factors that must be considered.

In 1972, the court in *NRDC* held that any action which substantially affected, "*beneficially* or *detrimentally* the depth or course of streams, plant life, wildlife habitats, fish and wildlife, and the soil and the air 'significantly' affects the quality of the human environment."[69] The CEQ Guidelines adopted this same approach, but with a slight variation. The guidelines state that the term "significantly" first requires considerations of both context and intensity.[70] For example, significance of site-specific action depends upon the effects in a locale rather than in the world as a whole, and both short term and long term effects are relevant.[71] Responsible federal officials must then look to the severity of the impact by considering a list of ten specific factors,[72] one of which is "[i]mpacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial."[73] This factor makes NEPA applicable to a much wider range of federal action than would otherwise be affected if only the significance of adverse effects were to be considered.

B. *Compliance with NEPA*

To determine if an EIS is required under section 102(2)(C) of NEPA, first an environmental assessment[74] must

---

69. 341 F. Supp. at 367 (emphasis added).
70. 40 C.F.R. at § 1508.27.
71. *Id.* at § 1508.27(a).
72. *Id.* at § 1508.27(b).
73. *Id.* at § 1508.27(b)(1).
74. *Id.* at § 1508.9.

be made by the responsible federal agency.[75] If that assessment finds evidence of a major federal action with a significant impact on the environment, then the more detailed EIS is required.[76] If however, the assessment finds evidence of no significant impact, then a written finding of no significant impact in the form of an EA must be prepared.[77] The contents of the EA is briefly summarized by the CEQ in its own Guidelines.[78] The court in *Simmans*, however, incorporated EPA's guidelines of 1973 in its decision when considering what factors should be considered in an EA. The court summarized these helpful factors as follows:

> (1) [a] brief description of project; (2) [the] probable impact of the project on the environment; (3) any probable adverse environmental effects which cannnot be avoided; (4) alternatives considered with evaluations of each; (5) relationship between local short-term uses of environment and maintenance and enhancement of long-term productivity; (6) an irreversible and irretrievable commitment of resources; (7) public objections to project, if any, and their resolution; (8) agencies consulted about the project; (9) reasons for concluding there will be no significant impacts.[79]

The preparation of this "mini" environmental analysis[80] in-

---

75. *Id.* at § 1501.4(b).

76. *Id.* at §§ 1501.4(c), 1508.11.

77. *Id.* at §§ 1501.4(e), 1508.13.

78. A finding of no significant impact by a federal agency requires the federal agency to produce a document,

> presenting the reasons why an action, not otherwise excluded (§ 1508.4), will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared. It shall include the environmental assessment or a summary of it and shall note any other environmental documents related to it (§ 1501.7(a)(5)). If the assessment is included, the finding need not repeat any of the discussion in the assessment but may incorporate it by reference.

Id. at § 1508.13.

79. 370 F. Supp. at 17. *See generally* Kleppe v. Sierra Club, 427 U.S. 390, 401-02 (1976) (where there is no regional plan, there is no basis for preparation of a programmatic EIS).

80. 370 F. Supp at 17.

sures that the courts will have available to them a reviewable environmental record.[81] In its absence, one of the purposes of NEPA is circumvented.

If NIH is guilty of any NEPA violation, without a doubt it was for its failure to prepare an EA or any other environmental record[82] when it began reviewing deliberate release experiments in 1982 and when it approved the Berkeley experiment.

However, defendants in the Rifkin suit contended that "strict compliance with NEPA's requirements were unnecessary because their actions constituted the functional equivalent of a traditional NEPA inquiry."[83] According to the CEQ Guidelines, an exception to NEPA compliance exists only when there is an unavoidable conflict in statutory authority.[84] The courts, however, have created one other exception to NEPA compliance. As explained in *Environmental Defense Fund v. Environmental Protection Agency (EDF)*,[85] the "functional equivalent" doctrine was first developed in *Portland Cement Ass'n v. Ruckelshaus*,[86] and was applied only to action taken by the Environmental Protection Agency (EPA) under the Clean Air Act (CAA). The basis for this decision was that CAA section 111 requires the functional equivalent of an EIS, and that EPA was an agency whose *raison d'etre* is the protection of the environment.[87]

The court in *EDF*, however, made clear that this doctrine should only apply where an agency is primarily engaged in an examination of environmental questions and has substantively and procedurely given "full and adequate consideration" to environmental issues.[88] Aside from the controversy over whether NIH is an agency engaged primarily in an examina-

---

81. A federal agency has an affirmative obligation under NEPA to create a reviewable environmental record. *Id.*

82. 40 C.F.R. at §§ 1501.4(e), 1508.9(1).

83. *Heckler I*, 587 F. Supp. 753, 765 (D.D.C. 1984), *aff'd*, 756 F.2d 143 (D.C. Cir. 1985).

84. 40 C.F.R. at § 1500.3.

85. 489 F.2d 1247, 1255-56 (D.C. Cir. 1973).

86. 486 F.2d 375 (D.C. Cir. 1973), *cert. denied*, 417 U.S. 921 (1974).

87. *EDF*, 489 F.2d at 1256, *discussing Portland Cement*, 486 F.2d at 384-87.

88. 489 F.2d at 1257.

tion of environmental questions, the fact that no recorded document is required for an RAC review of deliberate release experiments precludes NIH from the limited NEPA exemption. The basis for this conclusion is that NIH lacks any procedural standards of its own which may be substituted for an EIS. It would therefore appear that absent a recorded document to take the place of an EIS, defendants' contention of a functional equivalent defense cannot be realistically entertained. The rationale behind the district court's decision on this issue was virtually the same.[89] The court of appeals did not consider it.

IV. Discussion

The main issues presented in the Rifkin suit are whether an EIS was required for each of the following actions: NIH's 1978 guideline modifications; NIH's decision to begin reviewing deliberate release experiments in 1982; and NIH's approval of the Berkeley potato-crop experiment in 1983.

A. *Federal Action*

NIH is a federal agency, and although it was not initiating any action when it approved the Berkeley deliberate release experiment, it has by its decision permitted the scientists at the University of California to begin their field testing in the general environment. Under the holding of *SIPI*, this approval clearly qualifies as "[f]ederal action." Similarly, the decisions by NIH to modify its guidelines for recombinant DNA research and to begin reviewing deliberate release experiments in 1982 were self-initiated and therefore deserving of "[f]ederal" classification.

B. *Major Federal Action*

Since a determination of whether an action is "major" under NEPA hinges on whether the action is "significant," a discussion of whether the actions of NIH are major must

89. *Heckler I*, 587 F. Supp. at 765-66.

await a significance analysis.

C. *Major Federal Action Significantly Affecting the Quality of the Human Environment*

In view of the analysis in the previous section, both the beneficial and adverse effects of the Berkeley potato-crop experiment must be considered when determining if it will "significantly" affect the quality of the human environment.

Under the CEQ Guidelines, the first step in the significance analysis is to define the context of the proposed action. For example, the decision to approve the Berkeley experiment has a potential impact on many aspects of the environment including plant and insect life. Of course these aspects could be better defined by scientists involved in recombinant DNA research, but the above aspects are sufficient for this analysis.

Once the context is defined, the intensity of the action must be analyzed. As mentioned previously, this analysis must include a variety of factors that are outlined by the CEQ Guidelines. In addition to the beneficial and adverse impacts, they are: 1) the degree to which the proposed action affects public health or safety; 2) the unique characteristics of the geographic area; 3) the degree to which the effects are likely to be controversial; 4) the degree to which the possible effects are highly uncertain or involve unique or unknown risks; 5) the degree to which the action may establish a precedent; 6) cumulative impacts; 7) the degree to which the action may adversely affect historic, cultural, or scientific resources; 8) the degree to which the action may affect an endangered species; and 9) whether the action would violate federal, state, or local law.[90] At this point, the responsible federal officials should follow up with a pre- and post-action comparison of the affected environment and limit the studied changes to those that are likely to result from the "major [f]ederal action."[91]

The evaluation of significant beneficial or adverse effects is subject to a rule of reason. Agencies need not "forsee the

---

90. 40 C.F.R. § 1508.27(b) (1984).

91. McGarity, *The Courts, the Agencies, and NEPA Threshold Issues*, 55 Tex. L. Rev. 801, 848-850 (1977).

unforeseeable," but should not avoid the preparation of an EIS merely because describing the effects and alternatives "involves some degree of forecasting."[92] One of the functions of an EIS is to indicate the degree to which effects on the environment are essentially unknown. The court in *Sierra Club v. Peterson*[93] reiterated this interpretation when it held that, "[i]f any 'significant' environmental impacts *might* result from the proposed agency action then an EIS must be prepared before the action is taken."[94] The beneficial or adverse effects therefore need not be absolute in order to assess the significance of their impact on the quality of the human environment.

In fact, *possible* adverse effects have been given great consideration in decisions concerning similar actions that were subject to NEPA compliance. In *Save Our Ecosystems v. Clark*,[95] a consolidated case involving the spraying of herbicides on federally owned lands, the court emphasized the importance of explicating possible adverse effects in the decisionmaking process. Although the decision to approve the herbicides in each instance was accompanied by an EIS, the court went on to say that an EIS itself should include a worst case analysis if "the information relevant to adverse impacts is important to the decision and the means to obtain it are not known (e.g., the means for obtaining it are beyond the state of the art) . . . ."[96] The agency shall then balance the need for the action with the risk and severity of possible adverse impacts. If the agency chooses to proceed, it must then include a worst case analysis and an indication of the probability of its occurrence.[97]

The decision to approve the Berkeley experiment falls squarely within the above considerations. Without the oppor-

---

92. *SIPI*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

93. 717 F.2d 1409 (D.C. Cir. 1983).

94. *Id.* at 1415 (emphasis added).

95. 747 F.2d 1240 (9th Cir. 1984).

96. *Id.* at 1243 n.4 (quoting the CEQ Guidelines, 40 C.F.R. § 1502.22 (b)(2) (1984)).

97. *Id. See also* Southern Oregon Citizens Against Toxic Sprays, Inc. v. Clark, 720 F.2d 1475 (9th Cir. 1983).

tunity to field test, the adverse effects to the environment, if any, are virtually unknown, and the means for obtaining such information are beyond the state of the art until the experiment is actually conducted. In this light, if the need for the experiment outweighs the known risk and severity of potential adverse impacts, a worst case analysis must be prepared to aid the agency in making its final decision. As the *Save Our Ecosystems* decision states:

> Even one chance out of 10,000 that a catastrophic event . . . would occur is relevant information to a decisionmaker. Even if an event is unlikely, if responsible scientific critics present opposing points of view as to the possible environmental effects of a project, the agency has an obligation to respond to those views.[98]

What we can infer from this case is that if such uncertain significant adverse effects must be considered in the EIS itself, then the adverse effects that may trigger the necessity of an EIS under NEPA may be uncertain as well. In this respect, even low probability but high risk effects can be given sufficient consideration, and such consideration will subsequently be available for public review.

In the controversy over the release of modified bacteria in the Berkeley potato-crop experiment, plaintiff Jeremy Rifkin has alleged that by changing one phenotypic characteristic[99] of an organism, another unanticipated phenotypic characteristic might appear. According to Rifkin, the ensuing problem is that the traits which determine whether a particular microbe (modified bacteria) would thrive in a particular environment are not clear.[100] Mr. Rifkin has also suggested that the microbe could possibly alter weather patterns and disrupt ecological balances. He fears that perhaps the microbes will mi-

---

98. *Save Our Ecosystems*, 747 F.2d at 1245 n.6.

99. A phenotypic characteristic is one which is visible to the eye as opposed to a hereditary or genetic trait.

100. Baum, *Genetic Engineering Engulfed in New Environmental Debate*, Chem. & Eng'g News, Aug. 13, 1984 at 20.

grate and create havoc.[101] Additionally, he is concerned with the long-term cumulative impacts of releasing genetically engineered products.[102]

Rifkin also alleges that the microbes could become established in the environment and alter the natural ecology. However, Professor Lindow and most other scientists consider this probability to be non-existent. Professor Lindow has stated that " '[o]n a sunny day, these same types of mutations, if not the exact mutation, are being created. . . . If these bacteria were going to become the dominant form on plants, they would already have done so.' "[103] Lastly, Professor Lindow has claimed that Rifkin's scenario is irrelevant to his potato-crop experiment because the experiment is small-scale.[104]

A March 1984 House subcommittee report concluded that there is a low probability but high consequence of risk presented by deliberately releasing genetically engineered organisms into the environment.[105] Although the report made clear that no damage to any ecosystem caused by genetically engineered organisms is known of, it refers to Dutch elm disease, the Kudzu vine, and the gypsy moth as examples of exotic species that created havoc when introduced into new environments.[106] However, Dr. Bernard D. Davis[107] has explained that such analogies are irrelevant to the release of modified bacteria:

---

101. Bellew, *Life on the Land: Agricultural Research, Once Little Noticed, Grows Controversial*, Wall St. J., Nov. 21, 1984, at 1, col. 1.

102. Krieger, *Genetic Engineering Report*, Chem. & Eng'g News, Aug. 13, 1984 at 12.

103. Baum, *supra* note 100, at 18. In fact, Microlife Tecnics, Inc. (MT) of Sarasota, Florida had been quietly spraying naturally mutated strains of ice-minus *Erwinia* (another type of bacteria), to frost-sensitive crops in California, Florida, Georgia, North Carolina, Ohio, Michigan, Oregon, and Washington for three years as of the date of the report. MT had been testing the bacteria under contract for the University of Wisconsin Alumni Research Foundation. *Microlife Tecnics Field-Tests Natural Ice-Minus Bacteria*, Biotech. Newswatch, Dec. 19, 1983 at 8.

104. Baum, *supra* note 100, at 18-19.

105. Hanson, *Government Readies Rules for Biotechnology Control*, Chem. & Eng'g News, Aug. 13, 1984 at 35.

106. *Id.*

107. Dr. Bernard Davis is an Adele Lehman Professor of Bacterial Physiology at the Harvard Medical School.

> Such explosions have occurred only where a species was transferred to a new continent, where it no longer encountered the animals and plants that held it in check in its native habitat. But a bacterium that is modified genetically will not encounter such an ecological vacuum when released to its original environment, as in the ice experiment. Moreover, unlike higher organisms, bacteria can be distributed through the air and identical species are found on all continents.[108]

The potato-crop experiment would therefore superficially appear to have no significant adverse effects. In fact, if successful, the experiment may have significant beneficial effects. This is especially possible since classical methods of frost control have been noted to entail many problems.[109]

The real test for significant beneficial or adverse effects, however, must come from the responsible federal agency where a variety of factors and conditions may be scientifically considered. If either the beneficial or adverse effects are found to be significant, then the action will also be considered major and a full EIS must be prepared.

The district court, referring to the Berkeley potato-crop experiment, held that plaintiffs "identified several areas of plausible concern which . . . [were] not rebutted on the formal, or informal, record . . . ."[110] One possible effect of the experiment was noted to be the potential hazard to adjacent plant and insect populations. Despite Berkeley's contentions that RAC's informal review process adequately justified the NIH Director's finding of no significant impact, the court stated that any merit in this type of review is "significantly diminished by the lack of any written criteria to guide the NIH Director's ultimate decision."[111] On this basis, the court found

---

108. Davis, *Judge Sirica Chills Genetic Research*, Wall St. J., July 13, 1984, at 18, col. 4; *see generally* Brill, *Safety Concerns and Genetic Engineering in Agriculture*, 227 Science 381, 382-83 (1985).

109. Lindow, *Methods of Preventing Frost Injury Caused by Epiphytic Ice-Nucleation-Active Bacteria*, 67 Plant Disease 327 (1983).

110. *Heckler I*, 587 F. Supp. 753, 767-68 (1984), *aff'd*, 756 F.2d 143 (D.C. Cir. 1985).

111. *Id.* at 767-68.

that a NEPA violation was probable enough to support a preliminary injunction.[112]

On appeal, the federal appellants contended that NIH's only flaw was its failure to publish the results of its environmental assessment. The court, however, concluded that the deficiency rests not in *which* document contains the environmental analysis, but rather in NIH's "complete failure to consider the possibility of various environmental effects."[113] The court pointed out that the minutes of the RAC meeting, the only document which considered the environmental impact of the dispersion of the microbes, dealt with the possible environmental impact in the following single sentence: " 'Although some movement of bacteria toward sites near treatment locations by insect or aerial transport is possible, the numbers of viable cells transported has been shown to be very small; and these cells are subject to biological and physical processes limiting survival.' "[114] Thus, Judge Wright held that an EA which fails to address significant environmental considerations cannot be deemed adequate support for a decision that an EIS is not required.[115]

Judge Wright also rejected the NIH Director's conclusory statement of " 'no significant risk' " which was made when he gave final approval to the Berkeley experiment, and held that NIH must "complete a far more adequate environmental assessment . . ."[116] which must "provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact."[117] The court additionally noted that even unknown risks must be considered in accordance with the CEQ Guidelines.[118] Therefore, until a sufficient assessment is made, the question of whether an EIS is required remains open. Nevertheless, the court stated that since the EIS for the *original* guidelines

112. *Id.* at 768.
113. *Heckler II*, 756 F.2d 143, 145 (D.C. Cir. 1985).
114. *Id.*
115. *Id.* at 154.
116. *Id.*
117. *Id.* (quoting CEQ Guidelines, 40 C.F.R. § 1508.9(a)(1) (1984)).
118. *Id.* (citing CEQ Guidelines, 40 C.F.R. § 1508.27(b)(5) (1984)).

identified the problem with deliberate release experiments as a potential environmental hazard, unless NIH can now show otherwise, this fact will weigh heavily in support of the view that an EIS should be prepared.[119] Accordingly, the preliminary injunction remains in effect for the Berkeley potato-crop experiment.

A "significance" analysis for the 1978 decision to modify the guidelines would be difficult to do because there is no context in which to study the effects of such a decision. The field of microbial biology is vast and complex. To study the impact of deliberate release experiments in general would appear to be impossible. Since no particular experiments were contemplated or approved at the time, no specific affected region can be analyzed as is required under the CEQ Guidelines.[120] Additionally, in the absence of the ability to define the context of an action, the intensity of its effects becomes somewhat of an abstract and futile task. It therefore follows that without consideration of both context and intensity, the term "significantly" as used in NEPA cannot be interpreted. Accordingly, if the action cannot be labelled as significant, neither can it be labelled as major under the CEQ Guidelines.[121] Thus, an EIS for the decision to revise the guidelines should not be required. The decision may be viewed merely as a decision to decide, giving the NIH director the discretion to approve a deliberate-release experiment at a future date, based on its own merits. At this stage, then, there can be no significant impact.

Judge Sirica of the district court decided that the Director of NIH, in his decision to modify the guidelines, failed to meet three of the four criteria that were initially set forth in *Maryland National Park & Planning Commission v. United States Postal Service*.[122] The court found that NIH did not take a "hard look" at the problem, did not identify the relevant areas of environmental concern and, as to the problems

119. 756 F.2d at 154-155.

120. 40 C.F.R. § 1508.27(a) (1984).

121. *Id.* at § 1508.18.

122. 487 F.2d 1029, 1040 (D.C. Cir. 1973).

studied and identified, did not make a convincing case that the impact was insignificant. Judge Sirica concluded that "[t]he Director approved major [f]ederal action without the benefit of a specific or general investigation into the environmental hazards of deliberate release experimentation."[123] On this basis, the court believed that the plaintiffs would prevail on their claims of a NEPA or APA violation and therefore ordered a preliminary injunction halting NIH's approval of all further deliberate release experimentation.

The court failed to note, however, the difficulty of studying the "significance" of a "decision to decide" in the absence of a definitive context. If the court had deferred to the CEQ Guidelines at this stage of its decision, the relative "insignificance" of this decision to decide would have been realized instead.

In the instance of a non-significant impact, the court in *Monarch Chemical Works, Inc. v. Exon*[124] succinctly explained that:

> Environmental protection would not be served by requiring an EIS where a major [f]ederal action is insignificant within the meaning of NEPA. The amount of time that the preparation of a full-blown impact statement entails is out of proportion to the environmental risks involved. If a project's impacts are insignificant, the efforts of the decision-making entity can be directed toward the completion of proposed actions rather than the preparation of detailed documents that serve no environmental interest.[125]

Therefore, in the case of deliberate release experiments, the appropriate time to consider preparation of an EIS is when an individual experiment is proposed.[126] Only then can an analy-

---

123. *Heckler I*, 587 F. Supp. at 762.

124. 466 F. Supp. 639 (D. Neb. 1979).

125. *Id.* at 647-48. *See also* Sierra Club v. Bergland, 451 F. Supp. 120, 129 (N.D. Miss. 1978).

126. According to the Court in *SCRAP*, "the time at which the agency must prepare the final 'statement' is the time at which it makes a recommendation or report on a *proposal* for federal action." 422 U.S. 289, 320 (1975). The CEQ Guidelines have

sis of significant effects be realistically made.

The court of appeals affirmed this view when it held that "the 1978 policy change did not necessarily represent the 'point of commitment' that triggers NEPA."[127] The revisions did not irrevocably commit NIH to any decision, and NIH had the authority to grant or deny approval of deliberate release experiments on a case-by-case basis. Additionally, since the modifications were made prior to the time when the deliberate release of genetic experiments was considered feasible, the court stated that it was senseless to base a judgment for prospective relief "on decisions made several years ago under very different circumstances."[128] For these reasons, the court held that to focus on the 1978 revisions as an independent basis for injunctive relief and the preparation of an EIS was inappropriate.[129]

The plaintiffs' final allegation that a PEIS should have been prepared when NIH first began reviewing deliberate release experiments in 1982 again presents obstacles that hinder interpretation of the term "significantly" under NEPA.

A program decision is one that treats "a group of existent or contemplated actions as a single unit."[130] According to the CEQ Guidelines, however, the actions cannot be randomly associated, but instead must be connected,[131] cumulative,[132] or

---

also confirmed this view. 40 C.F.R. at § 1508.23. On this basis, an EIS should have been prepared and issued as part of the decision to approve the experiment. In practice, this means that a draft EIS should have been prepared when the University of California at Berkeley submitted its proposal to NIH for approval of the potato-crop experiment.

127. *Heckler II*, 756 F.2d at 158.

128. *Id.*

129. *Id.*

130. McGarity, *supra* note 91, at 808.

131. 40 C.F.R. at § 1508.25(1). The CEQ Guidelines state in relevant part that: Connected actions . . . means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they: (i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously. (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

132. *Id.* at § 1508.25(2). The CEQ Guidelines state in relevant part that: "Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement."

similar.[133] Although NIH may have approved or reviewed several deliberate release experiments within a period of time, plaintiffs have failed to show that the experiments meet the criteria outlined by the CEQ Guidelines in order for them to be considered connected or similar. As a result, interpreting the significance of such experiments as a program is again hindered by the inability to define a context and to subsequently study the intensity of an impact. The major obstacle is that *no* existing program has been proven. Consequently, such action should not be considered "major" and therefore should not require an EIS.

The district court agreed with plaintiffs' contention that a PEIS was necessary when NIH began reviewing deliberate release experiments in 1982. The court found that 1) a PEIS could provide a uniform standard that may have been used to initially approve the three deliberate release experiments; 2) the NIH guidelines may be viewed as a comprehensive program "which purports to directly govern all NIH-related research involving the deliberate release of recombinant material into the environment"[134] ; and 3) there is a "substantial likelihood" that the authorization of experiments "using the same novel technology are 'connected,' . . . potentially 'cumulative,' . . . and sufficiently 'similar.' "[135] But as was noted above, although the technology may be the same, the organisms that are altered may vary, the nature of the experiments themselves may vary, and the affected regions may vary. The terms "connected," "cumulative," and "similar" become useless when the alleged similarity goes no further than the general type of project and provide no context in which to analyze the effects of an action.

---

133. *Id.* at § 1508.25(3). The CEQ Guidelines state in relevant part that:
Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental conseqencies [sic] together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

134. *Heckler I*, 587 F. Supp. at 764.

135. *Id.* at 764.

On appeal, Judge Wright noted that a "programmatic EIS should be prepared if it can be forward-looking and if its absence will obstruct environmental review."[136] Moreover, the court held that if NIH adequately considered environmental factors for each deliberate release experiment, the absence of a PEIS would not be obstructing environmental review since a site-specific EIS would be a far more complete and rigorous analysis. Although the court agreed with the district court's finding that a PEIS would be helpful for future planning, it concluded that this consideration alone was not sufficient to support a finding of necessity for a PEIS. For these reasons, the court reversed the district court's finding that plaintiffs are likely to succeed in showing that NIH should have prepared a PEIS for deliberate release experiments. It should be noted, however, that as to future decisions to approve deliberate release experiments, the court pointed out that NIH should at least consider the advisability of a PEIS to comply with NEPA and the CEQ Guidelines.[137] The court therefore vacated the part of the preliminary injunction enjoining NIH approval of all deliberate release experimentation.

In summation, the only NIH action that appears to clearly require the preparation of a full-blown EIS was the decision to approve the Berkeley potato-crop experiment.[138] The final determination, however, will be made by the District Court when it decides on the merits of NIH's alleged NEPA and APA violations. Until then, the preliminary injunction halting the Berkeley potato-crop experiment remains in effect.

V. Conclusion

The impact NEPA has on environmental effects of federal agency decisionmaking relies heavily on compliance by each individual agency, and compliance can be effectively insured only by judicial enforcement.

In the long run, initial compliance with the EIS require-

136. *Heckler II*, 756 F.2d at 159.

137. *Id.* at 160.

138. Although NIH released a 60-page EA declaring a negative impact in early February, the sufficiency of this EA is still subject to judicial review.

ment would appear to benefit rather than cripple the field of genetic engineering. By timely preparation of an EIS (if the circumstances dictate a need for one), the responsible federal agency assures itself that it has reviewed environmental considerations and that it has affirmatively developed an environmental record for outside review. Simultaneously it will have provided the public with the relevant influential factors considered in the making of its major decisions, as well as with a detailed statement of the nature of the projects involved. The result would be a decrease in the number of suits initiated to halt genetic experiments in fear of an environmental catastrophe. Compliance with the statute would reduce the need for judicial intervention.

The first major step towards giving NEPA the substantive impact it needs to be effective is to create more definitive guidelines on the meanings of threshold terms such as "major," "federal," and "significantly" so that both the agencies and the courts have a consistent basis for an EIS assessment. The second major step is to stress in an amendment to NEPA itself the binding authority that the CEQ Guidelines have on federal agencies when they interpret the provisions of NEPA. This step will help to insure consistent application of the Guidelines.

At the same time, however, Congress and the judiciary should pay heed to avoid the total incapacitation of government agencies and the halting of scientific progress that might result from overly broad requirements for an EIS. Purely administrative matters, such as "decisions to decide," which have no actual impact on the environment, should be exempted from EIS requirements. The wisdom of this view was accepted in the drafting of the APA, which exempts administrative matters from notice and comment requirements.[139]

Lastly, with these goals in mind, it may be inspiring to recall what Justice Douglas expressed in the *SCRAP* decision: "NEPA is more than a technical statute of administrative

---

139. 5 U.S.C. § 553(b) (1982).

procedure. It is a commitment to the preservation of our environment."[140]

Elizabeth Pizzulli

140. 422 U.S. 289, 331 (1975) (Douglas, J., dissenting).