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The world is rapidly depleting its energy reserves. When oil prices skyrocketed in November of 1973, as a result of the Arab oil embargo, alternative sources of energy were ardently sought. The oil embargo brought to the attention of millions what environmental groups have been telling us for years—natural resources are a finite commodity which we are expending at such a dangerously rapid rate, that if alternative energy sources are not developed immediately our present economic lifestyle may be short-lived.

The embargo poignantly reminded the United States and other industrialized nations of the degree to which they depend on foreign energy resources. This prompted President Nixon to implement new energy programs, demanding, among other things, that Americans conserve energy in order to help reduce our dependence on foreign oil.[1]

In recognition of the world's need for alternative energy sources, this paper will examine several nuclear power plant siting questions with a special focus on public concerns in both France and the United States.

Dr. Dixie Lee Ray, the former chairperson of the United States Atomic Energy Commission (AEC), stated in a speech to the European Nuclear Society that most opposition to nuclear power stems from fear.[2] This fear is a combination of both the known and unknown effects of the widespread use of nuclear power. From sickness and death caused by unseen radiation to fear of a major nuclear accident, the public is becoming acutely aware of the perils of the nuclear age. The public fear

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1. *See* Statement by the President Announcing a Series of Actions to Deal with the Energy Crisis, 9 WEEKLY COMP. PRES. DOC. 867 (June 29, 1973). *See also* President's Message to Congress, 119 CONG. REC. 12889 (1973).

2. A. LOVINS & J. PRICE, NON-NUCLEAR FUTURES: THE CASE FOR AN ETHICAL ENERGY STRATEGY xvii (1975) [hereinafter cited as A. LOVINS].

of nuclear power must be balanced against the needs of an industrial world for alternative energy sources.[3]

I. NUCLEAR POWER IN FRANCE

A. *History of Atomic Energy in France*

France's first encounter with atomic energy started in the laboratories of Henri Becquerel and Frédéric and Irène Joliot-Curie in 1934 with the discovery of artificial radioactivity.[4] In 1945, following World War II, there was official state recognition of the potentially peaceful uses of atomic energy.[5] Since October 1945, when Charles de Gaulle established the French Atomic Energy Commission,[6] successive French governments have followed a consistent energy program with two fundamental goals: (1) to provide energy at a minimal cost; and (2) to limit French dependence on foreign energy sources.[7] At the close of World War II, the French government nationalized the majority of the fundamental industries, including Electricité de France (EDF), which established a governmental monopoly over energy-related production.[8] The employment of nuclear reactors for major public and commercial use thus remains under governmental control and precludes nongovernmental ownership of nuclear facilities.[9]

EDF's initial nuclear energy project was the development of a natural uranium graphite-gas line of reactors.[10] In the 1960's, France realized that the graphite-gas line of reactors was outdated and thus decided to employ the American

3. Ralph Lapp, an environmental consultant to the Senate Public Works Committee, said that "the issue centers upon the nagging question about probability of a major nuclear accident . . . and . . . a modern industrial society demands power . . . . This means that sites will have to be found for these plants and there will have to be a balancing of risk and reward." D. BEHRMAN, SOLAR ENERGY: THE AWAKENING SCIENCE 10 (1976).

4. L. SCHEINMAN, ATOMIC ENERGY POLICY IN FRANCE UNDER THE FOURTH REPUBLIC 3 (1965) [hereinafter cited as L. SCHEINMAN].

5. *Id.* at 6.

6. Ordonnance 45-2563 of 18 Oct. 1945, [1945] J.O. 7065.

7. Dürr, *L'Énergie Nucléaire en France* 4, ELECTRICITÉ DE FRANCE (1978) [hereinafter cited as Dürr].

8. Loi 46-628 (Apr. 8, 1946) [1946] J.O. 2951.

9. *See* Grzybowski & Dobishinski, *Property and Tort in Nuclear Law Today*, 10 VAND. J. TRANSNAT'L L. 446 (1977).

10. Dürr, *supra* note 7, at 5. This type of reactor was chosen because, during the postwar period, France did not want to become dependent on foreign nations for her development and the fuel needed for this type of reactor was readily available in France. *Id.* at 4-5.

Pressurized-Water-Reactor (PWR).[11] Export possibilities in the early seventies were a crucial factor in this decision.[12] Then, shortly after the 1973 oil embargo, the French government decided to accelerate its nuclear energy program. In order to bring the French nuclear industry under exclusive government control, the *Commissariat à l'Énergie Atomique* (CEA) was authorized to buy back a portion of Westinghouse's interest in Franatom.[13]

B. *Structure of the CEA*

After the nationalization of her primary industries, France's desire to become one of the leading postwar powers led President de Gaulle to form, under the Atomic Energy Commission, the *Commissariat à l'Énergie Atomique.*[14] The CEA, a scientific establishment vested with a civil personality and a somewhat unique administrative and financial autonomy, was placed under the control of the President of the Provisional Government.[15] Its main purpose, according to the enabling ordinance, was to research the practical applications of atomic energy.[16] The organization was subsequently modified, and now the CEA is under the direct authority and control of the Prime Minister.[17] Beneath the Prime Minister are: (1) the Administrator-General who acts as both the administrative director of the CEA, and as the official spokesman and delegate of the French Government;[18] and (2) the High-Commissioner who controls the scientific and technical aspects of the agency.[19]

C. *France and Euratom*

Late in 1957, the European Atomic Energy Community (Euratom) was created upon the signing of the Treaty of Rome.[20] The Euratom Treaty created an international commis-

11. *Id.* at 8-9.

12. *Id.* at 11. Franatom obtained the requisite licenses from Westinghouse for PWR construction and Sogerca was licensed by General Electric for production of Boiling-Water-Reactors (BWR).

13. *Id.* at 12.

14. Ordonnance 45-2563 of 18 Oct. 1945, art. 1, [1945] J.O. 7065.

15. *Id.* The administrative functions of a traditional French public institution are delegated to one of the government ministers in the executive branch. *See also,* L. SCHEINMAN, *supra* note 4, at 9.

16. Ordonnance 45-2563 of 18 Oct. 1945, [1945] J.O. 7065.

17. L. SCHEINMAN, *supra* note 4, at 11.

18. Ordonnance 45-2563 of 18 Oct. 1945, art. 2, [1945] J.O. 7065.

19. *Id.* at art. 3. *See generally,* 2 ASPECTS DU DROIT DE L'ÉNERGIE ATOMIQUE 68 (H. Puget ed. 1967) [hereinafter cited as H. Puget].

20. Treaty Establishing the European Atomic Energy Community, [1958] 298

sion which was to supersede national legislation in this area in order to maximize the management and exploitation of nuclear energy and materials in Europe. In spite of conflicting political and institutional ideologies, the Six generally agreed that Euratom should be vested with: (1) the right to stock fissionable materials; (2) the power to create and manage common institutions;[21] (3) the coordination of research and planning; and (4) the right to open the market for nuclear materials and equipment.[22]

Euratom threatened France's desire to remain a major postwar power. French atomic development was far superior to that of its potential partners, and France feared a loss of control over her vital resources.[23] It was not until France was assured that she alone would have control over her atomic military rights that she assented to the Euratom Agreement.[24]

D. *French Legislation in the Nuclear Field*

1. *Base Installations*

Government intervention and regulation of the nuclear energy industry are a direct result of the potential public hazards of nuclear materials. The French Government, by means of *Décret* 63-1228 of December 11, 1963 (Decree of 1963), specifies legislative requirements for "basic nuclear installations."[25] The legislation establishes strict conditions which a base nuclear installation must satisfy before proper authorization for construction can be granted.[26]

2. *The Decision Processes*

The owner-operator of a nuclear facility must submit a

U.N.T.S. 169. The treaty was signed by the original "Six" nations of the EEC: France, Belgium, Germany, Italy, Luxembourg, and the Netherlands.

21. *Id.* at art. 86. Under the Euratom Treaty, the Community became the legal owner of all special nuclear materials produced by the member nations. *See also,* Smith, *The European Atomic Energy Community: The Limits of Supernationalism,* 1 CAL. W. L. REV. 33 (1970). The control and management of these institutions rests on the degree of commitment from the individual countries. The Euratom Treaty sanctions the inspection and control of nuclear facilities as a safety measure against the manufacture of nuclear weapons. *Id.* at 37.

22. [1958] 298 U.N.T.S. 169.

23. L. SCHEINMAN, *supra* note 4, at 144-45.

24. *Id.* at 166.

25. Décret 63-1228 of Dec. 11, 1963, [1963] J.O. 11092, modified in part on March 27, 1973. These regulations place the *more important* installations, from planning through functioning, under diverse controls. *See* Bourgeois, *Nuclear Installation Safety* 18, ELECTRICITÉ DE FRANCE (1978) [hereinafter cited as Bourgeois].

26. *Id.* at art. 3.

series of safety reports to the various administrative offices in charge of granting construction permits before a license to operate can be granted. The first of these reports is the preliminary report, which is submitted to the Minister of Industry, and enumerates the safety measures to be taken by the owner-operator.[27] Next, the provisional report is submitted to the Inter-Ministerial Committee for Basic Nuclear Installations (CIINB) which predicts the performance of the unit as a whole and of its various safeguard components.[28] Then the final report is submitted to the CIINB after all tests have been completed, and specifies the actual measured performance of the unit.[29]

An independent agency is required to examine the proposed safety standards to guard against the possible bias of reports submitted by owner-operators, and to determine the advisability of granting a license.[30] The proposal must then be reviewed and approved by several government officials before the Prime Minister finally authorizes the nuclear installation.[31] A draft proposal is passed, in the following order, from the Institute for Health, Physics, and Nuclear Safety,[32] to the Standing Groups,[33] to the Minister of Health, to the Minister of Industry, to the CIINB, and to the Ministers in charge of that particular type of nuclear installation for final review.[34]

The request for authorization to build a nuclear installa-

27. Bourgeois, *supra* note 25, at 35. The preliminary reports generally include the proposed actions of the owner-operators concerning general safety principles, main technical safety options, design studies, and a preliminary safety study.

28. *Id.*

29. *Id.*

30. *Id.* The safety reports are sent to a Standing Group of experts who review the material and then make a proposal, for or against the facility, to the Central Service for Nuclear Installation Safety.

31. *Id.* at 39.

32. *Id.* at 36. This administrative body was formed in November 1976, by a joint order from the Minister of Industry and Research and the Minister of Economy and Finance. The institute's primary function is to perform studies, research, and works on physics and nuclear safety. It must also assist and advise the Ministers on CEA matters.

33. *Id.* at 37. The Standing Groups are divided into three catagories: the first group is in charge of nuclear reactors, the second group is in charge of particle accelerator safety, and the third group is in charge of other nuclear installations (such as reprocessing plants). The Standing Group in charge of a particular institution will evaluate and combine the safety reports submitted by the Institute for Health, Physics, and Nuclear Safety. The experts will add any technical specifications which they deem necessary, and the owner-operator must comply with these specifications.

34. *Id.* at 39.

tion[35] must contain: (1) the characteristics of the installation; (2) a descriptive notice of the geographic region and the reason for the site choice; (3) potential environmental effects; (4) proposed control of the nuclear materials; and (5) security precautions.[36] Before the administrative functions are complete, the public must be given an opportunity to express their views of the project and of the location of the installation.[37]

E. *Environmental Protection*

Article 1 of the law of July 10, 1976, requires that an impact study on the environment and the region surrounding the proposed site be made each time an operating license is considered.[38] The purpose of the impact study is to systematically determine the effects of a nuclear facility on the environment, as well as on the local population.[39] It is the responsibility of the owner-operator applicant, public or private, to conduct all necessary impact studies.[40]

Once the impact study is completed, a hearing is held to familiarize the public with the new installation and to receive feedback from interested citizens.[41] Hopefully, public scrutiny will insure an objective, high quality, impact study. Publicity for the hearing must be paid by the applicant, while the breadth of publicity is determined by the regional prefect.[42]

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35. *See* Decree of March 27, 1973, arts. 3 and 6 bis.

36. DÉLÉGATION GÉNÉRALE À L'ÉNERGIE, L'ÉNERGIE NUCLÉAIRE: LE PROJET SUPERPHÉNIX À CREYS-MALVILLE 27 (1977) [hereinafter cited as DÉLÉGATION GÉNÉRALE À L'ÉNERGIE].

37. *Id. See also* Décret 63-1228, art. 8, (Dec. 11, 1963) [1963] J.O. 11093. Under the provisions of article 8, the Commission must answer, within three months, an inquiry into the licensing of a particular installation. The article mandates that the purpose of the prescriptions is to avert all public danger and inconvenience.

38. Loi 76-629 (July 10, 1976) [1976] J.O. 4203, modified by Décret 77-1141 (Oct. 12, 1977) [1977] J.O. 4948.

39. Décret 77-1141, arts. 1 & 2, (Oct. 12, 1977) [1977] J.O. 4948. The impact study should report the initial condition of the site, including agriculture, forests, marine life, and so forth. The study should also include probable effects on the environment and population if a nuclear facility is to be located on the site.

40. Décret 77-1131, art. 3, clause 4 (Sept. 21, 1977) [1977] J.O. 4849.

41. *Id.* at art. 5. When the applicant's dossier is complete, the prefect of the region reviews the findings, and if all requisites have been met, he will order a public hearing.

42. *Id.* at art. 6. Public notices must be posted in all communities and areas which will be affected by the facility. Eight days before the hearing adequate notice must be given in the local or regional newspapers and, if the prefect deems it necessary, he may require the sponsor to employ other means of communication.

The impact study and public hearings are designed to include the public in the decisionmaking process at an early stage, so information about fundamental issues, particularly environmental quality and public protection, must be available to all interested parties. The public recommendations are included in the licensing proposal.

F. *Safety Concerns*

According to the Decree of 1963, those installations which cause inconvenience or endanger the public are placed under the surveillance of administrative authorities.[43] These facilities are divided into three classes according to the gravity of potential danger or inconvenience inherent in their exploitation.[44] Although atomic research and the construction of reactors and laboratories are under the direction and control of the CEA, France has public organizations, outside the control of the CEA, such as *les Amis de la Terre* (Friends of the Earth), which perform an important function in the nuclear industry. These organizations usually act under either the *loi du 19 décembre 1917* (the Law of 1917) which regulates dangerous establishments, or under the Decree of 1963 which controls potential public hazards.[45]

Under French regulatory law, only the operator of a nuclear installation may receive a construction permit. When all other necessary licenses have been obtained, the operator becomes responsible for the safety of the installation.[46] Minimum safety standards are established by the Minister of Industry, Trades, and Crafts.[47] This ministry controls the Central Service for the Safety of Nuclear Installations (SCSIN), a group of experts who study the technical problems associated with creating, servicing, and shutting down nuclear facilities.[48]

Article 11 of the Decree of 1963 requires two types of inspectors at all primary nuclear installations.[49] The first kind

43. H. Puget, *supra* note 19, at 22.

44. *Id.*

45. *Id.* at 23.

46. Torquat, *L'Organisation des Pouvoirs en France dans le Domaine de la Sureté Nucléaire* 4, ELECTRICITÉ DE FRANCE (1978) [hereinafter cited as Torquat].

47. *Id.* at 5.

48. DÉLÉGATION GÉNÉRALE À L'ÉNERGIE, *supra* note 36, at 27. SCSIN is concerned with the licensing of the facility, and with the general preparation and enforcement of technical specifications concerning the safety of the installation.

49. Décret 63-1228, art. 11, (Dec. 11, 1963) [1963] J.O. 11093.

of inspector falls under the purview of the Law of 1917, and is charged with the regulation of primary nuclear installations.[50] Inspectors of the second type are agents of the *Service Central de Protection contre les Rayonnements Ionisants* (SCPRI). Their function is to monitor the radioactive pollutants and to control the effect of pollutants outside of the installation, with special emphasis on protection of the public health and safety.[51]

The public is further protected by the *Décret 75-713 du 4 août, 1975* (Decree of 1975) which establishes an Inter-Ministerial Commission for Nuclear Security.[52] This commission is responsible for protecting persons and their property against nuisances and dangers from the creation, functioning, or shutdown of nuclear facilities.[53] France employs "barrier analysis" in its safety study of reactors. Barrier analysis entails a study of the reactor once it has been completed, and can be used on any reactor-type.[54] This independent approach stresses safety precautions which must be taken to prevent accidents, and defers until the end of the analysis the review of the reactor's emergency devices.[55]

G. *Liability and Damages*

The owner-operator of a nuclear facility is responsible for the safety aspects of its operations, and is absolutely liable for any damages caused by a nuclear reactor, as set forth by the 1960 Paris Convention.[56] The maximum liability of the operator is 50 million francs per accident, regardless of the number of facilities on that site.[57] The French Government is liable for amounts not covered by the operator's insurance, up to a maxi-

50. *Id.*

51. *Id.*

52. Décret 75-713 (Aug. 4, 1975) [1975] J.O. 8116.

53. *Id.*

54. Bourgeois, *supra* note 25, at 27.

55. *Id.* Each reactor has 3-4 tight barriers: (1) the cladding; (2) the primary system boundary; (3) the primary; and (4) secondary containment barriers. Each barrier is analyzed for: (1) normal operating conditions; (2) normal transients (start-ups, power raising, load variations); and (3) accident transients. *Id.* at 28-29.

56. Convention on Third Party Liability in the Field of Nuclear Energy, July 29, 1960, art. 3, 55 AM. J. INT'L L. 1082 (1961). Although article 3 indicates that the operator is absolutely liable, article 9 states that if the damage is caused by unforeseeable civil conflicts, civil war, or catastrophic disasters, the operator will not be held accountable.

57. Loi 68-943, art. 4 (Oct. 30, 1968) [1968] J.O. 10195.

mum of 600 million francs.[58] However, the government is liable only after the operator has paid the full 50 million franc minimum deductible.

Anxiety about potential nuclear hazards, accompanied by the construction and operation of the world's largest commercial breeder reactor, the Super-Phénix, has caused concern in the environs of Creys-Malville where the facility is located.[59] The Super-Phénix is a joint energy program, controlled by the French Government and operated by the *Centrale Nucléaire Européene à Neutrons Rapides, S.A.* (NERSA) organization.[60] In full operation, the Super-Phénix will produce 1200 megawatts of electricity from its first five tons of plutonium. This large amount of plutonium explains the overwhelming public interest in the Super-Phénix installation.[61] The project was initiated in January of 1973, after which public meetings and debates were organized between antinuclear groups, environmentalists, agricultural concerns, and the proponents of the project.[62] Once the debates and studies were finished, the project was approved and work commenced in the spring of 1977.[63]

H. *Public Action in Nuclear Power Plant Siting*

Recent surveys in France indicate that since 1974, when over three-fourths of the population was in favor of nuclear energy, the number of nuclear proponents has plunged by

58. *Id.* at art. 5. *See also* Brussels Supplementary Convention, 2 INT'L LEGAL MATERIALS 685 (1963). Under the Brussels agreement, the signatories indicated a willingness to contribute to a maximum recovery of $120 million, but only after the individual insurance and the home state have contributed their shares.

59. Residents of the area have stated that they do not want to be the guinea pigs for the world's first operational breeder reactor. They feel that there are simply too many unknown factors, and no one knows exactly what may happen. L'EXPRESS, Aug. 8, 1977, at 28.

60. Centrale Nucléaire Européenne à Neutrons Rapides, S.A. This group was formed and controlled by France (EDF) which held a 51% interest. France was joined by Italy (ENEL) with 33%, Germany (RWE) with 16%, and small interests are owned by Belgium, Holland, and Great Britain. DÉLÉGATION GÉNÉRALE À L'ÉNERGIE, *supra* note 36, at 19.

61. L'EXPRESS, April 17, 1978, at 78. The opponents of the Super-Phénix are quick to point out that it only takes six kilos of plutonium to create an atomic bomb. Five tons of plutonium, which is one of the most toxic and enduring radioactive elements known to man, presents the danger of an explosion never before paralleled. There are also dangers ranging from the possibility of small leakages of radioactive effulgents to the possibility of terrorist attacks. *Id.*

62. DÉLÉGATION GÉNÉRALE À L'ÉNERGIE, *supra* note 36, at 42.

63. Dürr, *supra* note 7, at 15.

about twenty-five percent.[64] Antinuclear forces, especially the ecology groups, are a major reason for this decline. In the municipal elections of 1977, for example, the ecology groups created so much friction that the campaign focused almost entirely on ecological issues.[65]

The results of these elections show that ecology groups, such as *les Amis de la Terre* and *les Groupes Scientifiques pour l'Information sur l'Energie Nucléaire*, are becoming a significant power in the political arena.[66] Not only have elections been won or lost because of the "green vote," but the pressure they exert has also created new legislation which allows for the protection of the environment as well as providing the legal means by which these groups can exercise their rights.[67]

A renewed vigor was witnessed by these antinuclear factions when the French Government reemphasized its atomic energy programs and proposed to build at least forty conventional nuclear plants and one breeder reactor at Creys-Malville.[68] Demonstrations in France against atomic power plants have been relatively peaceful. However, during the protest against the Super-Phénix in the summer of 1977, violence marred the demonstration.[69] The demonstration at Creys-Malville had been planned for several months and nonviolence was stressed so successfully that many local politicians agreed to participate.[70] René Jannin, the prefect of the department in which Creys-Malville is located, stated afterward, "we made several tactical errors." Sufficient safety precautions were not taken.[71] Although German demonstrators have been more prone to violence, demonstrators now come from all over Europe and violence appears to have increased.[72]

The majority of participants at the Creys-Malville demonstration belonged to environmental groups and were not inter-

64. Sweet, *The Opposition to Nuclear Power in Europe*, BULL. ATOM. SCI. 41, 44 (Dec. 1977) [hereinafter cited as Sweet].

65. Sansen, *Le Mouvement Ecologique Français*, 2 RÉV. GÉNÉRALE NUCLEAIRE 3 (1977).

66. *Id.*

67. *See generally* Décret 77-760 (July 7, 1977) [1977] J.O. 3663.

68. TIME, Aug. 15, 1977, at 31.

69. L'EXPRESS, Aug. 8, 1977, at 23, 25.

70. *Id.* at 25.

71. *Id.*

72. Sweet, *supra* note 64, at 43.

ested in a violent demonstration. However, as the date of the protest approached, there were many who came solely for a violent demonstration against the "system." These dissenters were able to persuade the pacifists that their previous attempts to stop or change nuclear policy had been entirely futile and that the time had come for more forceful measures in these matters.[73]

The concern of both individuals and interest groups in nuclear power and the protection of the environment has caused the Government to delineate the necessary steps for increased public participation.[74] The Government has also indicated a desire to have more individuals participate in matters that will directly affect their life or lifestyle.

I. *Conclusion*

Although the French Government recognizes the utility of nuclear energy and the possibilities it presents for the future through breeder reactors, other "new energies" are ardently being explored.[75] The National Center for Scientific Research, for example, is one of the world's leading government institutions in the development of solar energy.[76] As the public and government become more aware of the problems in this area, new legislative measures are created to promote equitable solutions.

Since France has negligible oil reserves, very little coal, and no other visible energy possibilities at present, it appears that the development of nuclear energy is inevitable. The extent to which demonstrations and public attitudes are able to change French legislation, and/or stop further development of nuclear power, appears limited. Whether or not a scientific breakthrough will allow France to switch completely to solar, wind, or other "new energies" can be seen only in the future. Presently, France is aware that without nuclear power massive

73. L'EXPRESS, Aug. 8, 1977, at 28.

74. Décret 77-760, art. 6-8, (July 7, 1977) [1977] J.O. 3663. *See also* Circulaire of Jan. 10, 1977, [1977] J.O. ____.

75. As of May 1978, nuclear energy provided 12% of France's electricity. France's 1985 nuclear energy goal has been set at 20%. Le Monde, May 2, 1978.

76. DÉLÉGATION AUX ÉNERGIES NOUVELLES, SOLAR ENERGY FROM FRANCE 22 (1977). France has a solar furnace at Odeillo-Font-Romeu which is fed by sixty-three flat mirrors and can reach a temperature of 3,800°C. There are also several apartment buildings around France, sponsored by CNRS, which are entirely heated by solar energy.

amounts of foreign energy must be purchased. Given the French spirit of independence, it is doubtful that France would ever subject herself to the manipulations of energy-producing nations if French controlled nuclear power were available.

II. NUCLEAR ENERGY IN THE UNITED STATES

A. *History*

Shortly after World War II, the United States created the Atomic Energy Commission (AEC) and monopolized the nuclear energy field through the passage of the Atomic Energy Act of 1946.[77] This act was soon replaced by the Atomic Energy Act of 1954 which substantially limited the governmental monopoly of the nuclear field.[78] Although the 1954 Act invited more participation from private sectors, the nuclear energy field was slow to develop, due initially to the low cost of alternative energy sources.

Change came with the Energy Reorganization Act of 1974, which abolished the AEC and divided its duties between the newly formed Nuclear Regulatory Commission (NRC) and the Energy Research and Development Administration (ERDA).[79] Regulation and supervision of the construction, maintenance, licensing, and operation of nuclear power facilities within the United States was delegated directly to the NRC. The NRC has divided the licensing process into two steps: (1) a construction permit for the proposed nuclear reactor;[80] and (2) a license to operate the facility after the reports have been filed and the surveys taken.[81] ERDA's functions are to coordinate Federal

77. Atomic Energy Act of 1946, 60 Stat. 755 (1946) [codified at 42 U.S.C. §§ 2011-2296 (1976)].

78. Atomic Energy Act of 1954, ch. 1073, 68 Stat. 921 (1954) [codified at 42 U.S.C. §§ 2011-2296 (1976)]. Prior to the 1954 Act, private ownership, manufacture, or operation of a nuclear facility was prohibited, as the entire field was under the exclusive jurisdiction of the Federal Government. The passage of the 1954 Act invited public participation in the nuclear field. However, the government retained absolute control over nuclear fuels which were to be leased from the government. (This is set forth in 42 U.S.C. § 2061 (1978) which provides that the Commission shall be the exclusive owner of all production facilities except: (1) those dealing with research and development, which do not make enough fuel for atomic weapons; and (2) those licensed by the Commission pursuant to §§ 2133-2134 of the Act.)

79. Energy Reorganization Act of 1974, 42 U.S.C. § 5801 (1976).

80. 42 U.S.C. § 2239(a) (1976). Construction permits are granted only after all relevant siting criteria, environmental impact statements, and public notices of hearing requirements have been met. *See also* 10 C.F.R. § 50.34(b) (1978).

81. 42 U.S.C. § 2239(a) (1976).

activities relating to research and development of various energy sources.

B. *Preemption*

Numerous cases have arisen disputing the NRC's apparent exclusive control over the licensing process, in effect, preempting a state's action on matters within its own domain.[82] The preemption doctrine, which was first enunciated in *Gibbons v. Odgen,*[83] allows Federal regulations to take exclusive precedence over similar state regulations, with the exception of state regulations that pose no direct conflict, or those which Congress has not unequivocally declared preempted by Federal legislation.

Although the preemption doctrine has survived many years of Supreme Court rulings, it has not been adequately defined. Individual courts have maintained the power to construe state regulatory statutes according to the particular facts of the case,[84] and it was not until *Northern States Power Co. v. Minnesota*[85] that the question of preemption in the atomic energy area was decided.

The Atomic Energy Act of 1954 gave the Federal government exclusive jurisdiction and control over the regulation of *all* radiation-related hazards in the nuclear field. These joint judicial and administrative rulings had the effect of totally preempting the state government from making any independent judgments on health and safety issues.[86] Then, in 1959, an amendment to the Atomic Energy Act of 1954 created a major provision which granted authority to each state to regulate the nonradiation hazards within its own territory. The amendment provided that, "nothing in this action shall be construed to affect the authority of any state or local agency to regulate activities for purposes other than protection against radiation."[87] This allowed states to participate more meaning-

82. Northern States Power Co. v. Minnesota, 447 F.2d 1143 (8th Cir. 1971). *See generally* Yates, *Preemption Under the Atomic Energy Act of 1954: Permissible State Regulation of Nuclear Facilities Location, Transportation of Radioactive Materials and Radioactive Waste Disposal,* 11 TULSA L. J. 397 (1976).

83. 22 U.S. (9 Wheat.) (1824).

84. *See* City of Burbank v. Lockheed Air Terminal, Inc., 411 U.S. 624 (1974).

85. 447 F.2d 1143 (8th Cir. 1971).

86. Public Interest Research Group of New Jersey, Inc. v. New Jersey Dep't of Environmental Protection, 377 A.2d 915, 928 (1977).

87. 42 U.S.C. § 2021(k) (1976). In order to participate in a formal determination

fully in the siting process of nuclear facilities, and thus negated complete domination by Federal agencies.

Judge Van Oosterhout, in his dissenting opinion in *Northern States*, spoke out strongly against the notion of Federal preemption in this area.[88] He noted that there had been no apparent congressional intent to preempt this field; otherwise, Congress would have stated it explicitly in statutes or in their hearings on nuclear energy.[89]

C. *Environmental Aspects of the Licensing and Siting Process*

The NRC is not solely responsible for the licensing and siting process at the Federal level. In the often-cited case of *Claverts Cliffs Coordinating Commission v. United States Atomic Energy Commission*,[90] the requisite duties of the licensing process, as set forth in the National Environmental Policy Act (NEPA), are analyzed in detail.[91] *Calverts Cliffs* pointed out that NEPA was created to establish "environmental protection as an integral part of the AEC's basic mandate . . . and it must itself take the initiative of considering environmental values at every distinctive and comprehensive stage of the process beyond the staff's evaluation and recommendation."[92] However, as broad as this construction may appear, it did not give an unlimited grant of power to NEPA.[93]

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of a nuclear facility siting, the state representative must request a formal hearing before the Licensing Board as an interested party under 10 C.F.R. § 2.714 (1978).

88. 447 F.2d 1143, 1155 (8th Cir. 1971). "The Supreme Court has uniformly recognized the legislative intent of the state in its laws designed to protect the health and safety of its citizens and has refused to find federal-preemption over state health and safety laws, absent a clear and unmistakeable showing of an intent on the part of Congress to preempt." *Id.*

89. *Id.* at 1157. "There is nothing in the statutes which expresses a clear Congressional intent to prohibit the states from taking additional steps deemed necessary to control air, water and pollution. . . . The language of a statute controls over the legislative history, which is often ambigious. Congress was aware of the problem and could have solved it readily by incorporating appropriate language in the Act. It refused to do so." *Id.*

90. Calverts Cliffs Coordinating Comm'n v. United States Atomic Energy Comm'n, 449 F.2d 1109 (D.C. Cir. 1971).

91. *Id.* at 1112. Under this section, NEPA is not permitted, but rather is compelled, to take environmental values into consideration.

92. *Id.* at 1119.

93. [1977] NUCLEAR REG. REP. (CCH) ¶ 30,172.02. NEPA does not require an unbalanced weighting of the environmental issues over other factors, such as economic, or health and safety advantages. The purpose of NEPA is to insure that the agencies give appropriate consideration to the environmental factors in the decision process, but

Recent decisions have taken the approach of Judge Van Oosterhout in granting more power to the states and to local environmental groups while curtailing NRC's "exclusive" powers. An example in this shift of control can be seen in the recent Clean Air Act, which transferred the authority to regulate the radioactive effluents from nuclear power installations from NRC to the Environmental Protection Agency (EPA).[94]

Under the new Act, emission limitations may be enforced by citizen groups as well as by state and local governments. The Act permits the state to adopt air quality standards which are more stringent than those imposed by the Federal government. This includes control over radioactive pollutants, and thus overrules that aspect of the *Northern States* decision. The Clean Air Act also requires the EPA to determine, by August 7, 1979, whether the emission of radioactive pollutants at the various sites will endanger public health. If the EPA determination is affirmative, the radioactive pollutants will continue to be under EPA control pursuant to the Clean Air Act.[95]

D. *Present Siting and Licensing Requirements*

1. *Application Process*

A license to construct or operate a nuclear facility is considered only upon completion of the application form. This application must be presented at a public hearing before the AEC, and section 189(a) of the Atomic Energy Act requires that a Notice of Hearing on Application for Construction Permits be printed in the Federal Register thirty days prior to the hearing. The application must also include safety assessments and a description of the site, an evaluation of the design and of the performance of the structures,[96] and, finally, a safety analysis report.[97]

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the environmental protection aspect was not established as the exclusive goal.

94. Clean Air Act Amendments of 1977, 42 U.S.C.A. § 7401 (1978). It should be noted that the NRC maintained the responsibility for prescribing limits, and implementing and enforcing the EPA's radiation standards.

95. *Id.* Before EPA lists the source of the pollutant, it must first consult with the NRC and, no later than six months after the listing, the two agencies must agree to procedures which will minimize a duplication of their efforts with regard to the regulation of the polluting emmissions.

96. 10 C.F.R. § 50.34(a)(1) (1978). Such assessments shall contain an analysis and evaluation of the major structures, systems, and components of the facility.

97. *Id.* at (b). The safety analysis report must include information which describes the facility, and which presents a safety analysis of the structure, systems, compo-

2. *Review Process*

First of all, the NRC staff scrutinizes the health, safety, and environmental aspects of the application, and then drafts an environmental impact statement. Public comments must accompany both the application and environmental impact statement to insure increased public participation.[98] Next, the Advisory Commission on Reactor Safety (ACRS) must examine the design of each plant to eliminate possible safety hazards. After the ACRS report is submitted to the Commission, a public hearing is scheduled. Thirty days notice is required, and must be printed in the Federal Register.[99]

To increase public involvement and improve community relations, the Commission has permitted intervenors into the licensing process on the following grounds: (1) if they can show an independent injury or, basically, if they can meet judicial standing requirements; (2) if they live in the immediate vicinity of the proposed facility; or (3) if the Commission feels that they can significantly contribute to the licensing process.[100]

The nuclear installation siting process is one of the most time consuming aspects of the nuclear development program. In an effort to speed up this process, Appendix Q to 10 C.F.R. 50 was passed in 1977 to grant the right to request an early site review to any individual or group.[101] However, these reviews are subject to public interest considerations and are not conclusive until all vital information has been confirmed.[102] Further, the application for early site approval, if accompanied by a construction permit, will only be effective for a five-year period, with an additional one-year extension when good cause is shown.[103]

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nents, and the facility as a whole. All current information must be included, such as results of environmental studies, meteorological monitoring programs, etc.

98. 10 C.F.R. § 51.26 (1978).

99. 10 C.F.R. § 50.58 (1978).

100. The Atomic Energy Act does not mandate public hearings. However, such participation at an early stage can generate confidence in the Commission, and potentially will cut down the amount of time necessary for subsequent public hearings which may be required by law.

101. 42 Fed. Reg. 22,882 (1977).

102. *Id.*

103. *Id.* This new provision will allow any person, state, or other entity to request a review of the site suitability issues. However, there will be no issuance of a partial decision concerning the site unless the request for review is made during the construction permit proceedings. *Id.* at 22,887.

As in France, hearings are conducted by nuclear siting experts because of the technical nature of the issues involved.[104] However, interested individuals may participate in these hearings by filing a petition to intervene pursuant to 10 C.F.R. section 2.714 (1978).[105]

3. *Specific Siting Criteria*

Public involvement in the energy field has two major objectives: (1) to make certain that the facilities are as safe as possible; and (2) to place the facility in someone else's vicinity, if at all possible. The possibility of a major nuclear accident, coupled with the probability of serious problems caused by radioactive pollution and waste control, makes the correct siting of a nuclear installation imperative. To aid in the location of facility sites, the NRC has come up with several evaluation considerations.[106]

The major factors to be considered are population density,[107] meteorological conditions of the site environs, the intended use of the reactor, the unique qualities of the particular units, and geological configurations.[108] When more than one reactor is proposed for a nuclear power center, assessments should also include:

> A regional evaluation of natural resources, including land, air, and water resources, available for use in connection with nuclear energy sites; estimates of future electrical power requirements . . . economic impact at each nuclear energy site; and consideration of any other relevant factors, including but not limited to population distribution, proximity to electric load centers and to other elements of the fuel cycle. . . .[109]

These NRC siting criteria are flexible and were not intended

104. 42 U.S.C. § 2239 (1976).

105. 10 C.F.R. § 2.714 (1978). The petitioner must specifically identify those aspects of the application to which he is opposed, and must indicate his interest in the proceedings and the basis for his contention in a petition.

106. 10 C.F.R. § 100.10 (1978).

107. *Id.* at § 110.3(b). Population density includes the exclusion areas and low population zones. The exclusion area, as defined in section 100.3, is that area immediately surrounding the reactor in which the licensee has authority to determine all activities, including the exclusion of personnel and property. The low population zone immediately surrounds the exclusion area, and its limited population allows appropriate protective measures to be taken on its behalf in the event of a serious accident.

108. 10 C.F.R. § 100 app. A (1978). Important considerations in this area are the probability of earthquakes, tornadoes, hurricanes, floods, and tsunami which could result in a failure of the facility's functions.

109. 42 U.S.C. § 5847 (1976).

to be the final word in all situations. For instance, theoretically there can be no minimum or maximum size for an acceptable exclusion area; characteristics of the specific area will determine how large or small the exclusion area should be. However, the area must be large enough so that an individual located on its boundary would not, in the event of a postulated accident, receive a radiation dose in excess of the safe minimum as established by the NRC.[110]

E. *Liability Aspects of Nuclear Power Station Siting*

Human safety has been the primary reason for establishing a large exclusion area, but the potential liability for numerous types of possible accidents has also been a prime consideration. In fact, it was the basic reason for the slow development of private nuclear enterprise in the United States. Given the potential liability for a nuclear mishap, it was apparent that if Federal protection or subsidies were not provided, the public sector might never get involved in the nuclear energy industry. Thus, Congress passed the Price-Anderson Act of 1957,[111] which placed a ceiling on the amount of damages that could be recovered in any one incident.

The AEC now demands proof that the operator possesses, and will maintain, adequate financial protection as set forth by the Commission.[112] The Commission may also require that the applicant waive any immunity from public liability conferred by Federal or state laws.[113] Before 1975, liability was limited to $560 million. As in France, the operator of a nuclear facility in the United States must carry enough insurance to cover potential operational liabilities. However, in the U.S., coverage must also extend to third party liability.[114] Under section (c) of 42

110. 10 C.F.R. § 100.11(a)(1) (1978). The exclusion area must be of such a size that an individual located at any point on its boundary would not receive, for two hours immediately following the onset of the fission product release, a total radiation dose to the whole body in excess of 25 rem. Note 2 explains that 25 rem is the amount NCRP recommendations allow for a harmless, accidental, or emergency exposure to radiation workers.

111. Price-Anderson Act, 42 U.S.C. § 2210 (1976).

112. *Id.* at (a). The Commission will determine the minimum amount of liability insurance needed by the applicant by taking into consideration: (1) the cost and terms of private insurance; (2) the type, size, and location of the proposed facility; and (3) the nature and purpose of the licensed activity. Currently, the applicant must acquire insurance coverage up to $60 million for any individual accident.

113. *Id.*

114. *Id.* at (b), (c).

U.S.C. 2210 (1976) the Government will indemnify, up to $500 million, those licensees whose license requires less than $560 million coverage.[115]

F. *Nuclear Waste and Safeguards*

Another precondition of licensing is that the builder or licensee must determine the maximum foreseeable accident, and prove that sufficient safety precautions have been taken to guard against it.[116] In spite of safeguards, there is always the possibility of a serious accident.[117] Waste disposal is one of the greatest safety hazards associated with a nuclear powered installation, since radioactive waste generated from the facility must be carefully handled and isolated for prolonged periods of time.[118] Unfortunately, isolation is an expensive and imperfect way to control waste.[119] Waste control must be well planned, for as the court iterated in the *Natural Resource Defense Council* case, "Once a series of reactors is operating, it is too late to consider whether the waste they generate should

115. One of the reasons the Government is still subsidizing the nuclear industry is that, currently, private insurance will only cover a little over $100 million worth of liability. Until private insurance is available to substantially protect the public, the Government will continue to subsidize those portions not covered. *See* 42 U.S.C. § 2210(b), (c) (1976).

116. D. INGLIS, NUCLEAR ENERGY—ITS PHYSICS AND ITS SOCIAL CHALLENGE 115 (1973). The NRC recently shut down a nuclear facility in Idaho in order to determine if the safety precautions taken would, in fact, function properly. Wall St. J., Dec. 12, 1978, at 1, col. 1.

117. A. LOVINS, *supra* note 2, at 104. This may be demonstrated by the Browns Ferry incident, in which a technician, while searching for air leaks with a candle, caused a 7 ¼-hour cable tray fire under the control room. The emergency core cooling systems (ECCS) failed to function properly, and the only thing that prevented a core melt was manual control of pumps and valves which were not intended as safety functions. Another example of potential hazards is illustrated by an incident which occurred in Idaho when three inexperienced army personnel tried to move a sticky control rod in an "abnormal" way by hand. The three men were instantly killed by a burst of radiation, and more than a week passed before shielded clean-up workers were able to enter the building to remove the bodies. *Id.* at 116.

118. *Id.* at 140-41. There is a general two-step method of dealing with spent fuel rods. The first step is to store them under water at the facility site until the short-lived components of radioactivity die off. Next, they are placed in special heavy caskets designed to absorb radiation and minimize the chances of leakage while being transported either to fuel reprocessing plants or to underground storage areas.

119. National Resources Defense Council, Inc. v. United States Nuclear Regulatory Comm'n, 547 F.2d 633, 641 (D.C. Cir. 1976). The decision to license nuclear reactors, which generate large amounts of toxic wastes and which require a special isolation from the public and the environment for several centuries, is "a paradigm of irreversible and irretrievable commitments of resources which must receive detailed analysis under § 102(2)(C)(v) of NEPA" as found in 42 U.S.C. § 4332(2)(c)(v).

have been produced."[120] This decision is particularly significant because it finds that the NEPA regulations require consideration of the environmental effects of nuclear waste during the initial stages of the licensing process. Additionally, the NRC must consider the environmental aspects of the reprocessing of nuclear waste before granting a construction permit.[121]

G. *U.S. Public Interaction in the Siting Process*

1. *Case History of the Seabrook, New Hampshire Site*

The Seabrook nuclear facility site was chosen from nineteen possible New Hampshire locations in mid-1973. From the outset, there has been opposition to the Seabrook facility, generated principally from the Clamshell Alliance and Friends of the Earth. The NRC waited two years for final approval of the Seabrook site as a result of the environmentalist opposition.

In response to recent attempts to change the site, the NRC has stated that, "the test to be employed in assessing whether or not a proposed site is to be rejected in favor of another site is whether an alternative site is obviously superior to the site already approved."[122] Thus, it is apparent that a change will be made only under unusual circumstances brought about by time, environmental oversights, or other factors which would make an alternative site superior.

In 1977, the Clamshell Alliance staged a successful demonstration against the Seabrook site. The demonstration was planned well in advance, and nonviolence was emphasized. Volunteers were trained in the methods of nonviolent resistance and were to instruct small groups at the demonstration.[123] The protest culminated with the peaceful occupation of the Seabrook site by over 1400 demonstrators. The resistance train-

120. 547 F.2d 633, 640 (D.C. Cir. 1976).

121. *Id.* at 641. Environmental groups find this case significant because, "absent effective generic proceedings to consider these issues, they must be dealt with in individual licensing proceedings." This will give the opponents of nuclear power at least one more chance to slow down, or temporarily stop, reactor construction.

122. [1977] 2 NUCLEAR REG. REP. (CCH) ¶ 30,216.8. At least two significant realities of the NEPA process support the use of the standard of obvious superiority: (1) the inherent imprecision of cost/benefit analysis; and (2) the probability that more adverse information has been developed respecting the closely examined site than any alternative site.

123. TIME, May 16, 1977, at 59. The reason for increased participation in mass protests was best summarized by a spokesmen for the Clamshell Alliance, "We feel Seabrook in particular and nuclear power plants in general are life and death issues, we are acting in self-defense."

ing was so successful that it took police several hours to remove the majority of the demonstrators.[124] Then in June 1978, after negotiations with state officials, the Seabrook demonstration site was transformed into an "energy fair" attended by 20,000 persons.[125] The Seabrook incidents have signaled a new phase of mass public protest against nuclear power.[126]

In 1976, public protest in the German town of Whyl forced authorities to close that site and halt all construction of the nuclear power plant.[127] One reason that these demonstrations have gained such magnitude and attendance is that people are becoming more frightened of nuclear facilities. Public fear slows down the construction and licensing of these facilities, thus increasing cost. In addition, every concession and every added safeguard become a minimum demand for future facilities. It is no wonder that concessions to public demands are made reluctantly.

2. *Facilities*

The NRC licensing board is aware that the public desires to participate in the siting process, but given the technicality of the issues and the delay caused by public intervention, the licensing commission would like to limit public involvement. Since the NRC is an administrative body, it is able to focus on future events and political consequences instead of being encumbered by precedent.[128] This makes intervention all the more appealing since an individual who successfully argues his position may halt an entire project. As stated previously, an individual may intervene if he can show a potential harm, has standing, or lives in the vicinity of the project. He must not

124. NEWSWEEK, May 23, 1977, at 25. The "en masse" protests may have very serious effects on nuclear facility siting. As a purely economic factor, the Seabrook seige is an excellent example. While the demonstrators, held in the New Hampshire National Guard armories, were awaiting trial, it cost the state more than $50,000 per day to care for them.

125. N.Y. Times, June 25, 1978, at A18, col. 1. *See also id.* June 26, 1978, at A14, col. 2.

126. NEWSWEEK, *supra* note 124, at 25.

127. *Id.*

128. The administrative process is not an entirely independent proceeding. Judicial adjudication reviewing administrative functions were divided into three basic groups in Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402 (1971): (1) the court must first delineate the scope of the agency's authority, and then closely examine the facts to determine if the agency acted within its authority; (2) the decision made by the agency must not be arbitrary nor an abuse of discretion; and (3) the court must determine whether the agency adequately followed necessary procedural requirements.

only show how his interest will be affected, but must also specifically detail the problem he wishes to remedy.

An intervenor may petition for an amendment to any administrative regulation, for the passage of a new rule, or for the appeal of rules through the Administrative Procedure Act[129] or through 10 C.F.R. section 2.805(b) (1978). However, the petition must reflect "meaningful participation," not merely a delay tactic. This is ensured, in part, by the NRC requirement of proper standing.

There is ample justification for allowing public participation in the licensing process of nuclear facilities. Proponents of nuclear energy argue that intervention lengthens the construction time and thus increases the cost of facilities. On the other hand, opposition to nuclear energy is intense, and those who are denied an outlet for their objections will delay projects by various methods of demonstration, judicial intervention, and administrative slowdowns. In reality, significant participation by intervenors would ameliorate the entire process; issues would be identified more readily and accurately; and the power to influence an NRC decision would reduce unnecessary delay, thereby saving time and money.

H. *Public Interaction in Siting*

The use of nuclear power is an emotional, frequently debated issue. Violence and increased attendance at mass protests necessitate a constructive program of public participation. The program should serve a twofold purpose: (1) to permit the public to participate in and contribute to the licensing process; and (2) to disclose all information, and to identify and resolve major issues at the preconstruction stage of development.[130]

Notice of nuclear license and site hearings is available only to those who habitually read the Federal Register. This is an unrealistic and ineffective way to give notice: supplemental notices are necessary. As set forth in *International Harvester*

129. 5 U.S.C. § 553(e) (1976). *See also* Bain, *Informal Rulemaking: Quest of Nuclear Licensing Reform*, 55 DEN. L. J. 177 (1978).

130. The public is reluctant to accept the findings of the NRC or the public utility operators of nuclear facilities on the safeworthiness of an installation. The NRC, public utilities, and intervenors must make full disclosures in the initial proceedings if the system is to improve.

Co. v. Ruckleshaus,[131] adequate notice requires that the public be informed of the proposed regulations. In addition, all issues must be delineated, and descriptions of critical experiments must be included in the notice.

The public must be given complete, timely, and prominent notice. Since states have become more involved in nuclear siting and regulation, they should shoulder the responsibility of insuring adequate public notice concerning facilities within their own jurisdiction. Local newspapers and the electronic media could be used effectively to advertise the hearings.

III. CONCLUSIONS

The nuclear power question cannot be left to the exclusive control of governments. Groups and individuals in many countries have demonstrated a genuine concern for their safety, as well as a desire to effectively participate in the licensing process. Public concern is evidenced in the legislative and electoral processes of most nuclear powers.[132]

Nuclear energy is a controversial issue which will receive even more attention in the future. It is thus important that at least two objectives be met in the near future: (1) the public must be allowed to participate more effectively in the licensing process; and (2) alternative sources of energy must be developed.

Public participation in France and the United States has increased. Unfortunately, there are many problems yet to be resolved. For instance, the United States could follow France's example by expanding and diversifying public hearing notices, and France could allow more direct public participation in the licensing process. In both the United States and France, public relations need improvement. Since the public is skeptical of nuclear energy, proponents should take the offensive rather than the defensive: the public needs to be informed of the safety features and successes of existing nuclear programs. In-

131. International Harvester Co. v. Ruckelshaus, 478 F.2d 615 (D.C. Cir. 1973).

132. Sweet, *supra* note 64, at 41. The anti-nuclear sentiment was so strong in Sweden that it culminated in victory for those politicians who espoused anti-nuclear views.

In Austria, the anti-nuclear movement has been so successful that the 700mw Zwentendorf nuclear facility, which was completed at a cost of $650 million, and which is now standing idle, was rejected by Austrian voters in a national referendum. Rocky Mountain News, Nov. 6, 1978, at 3, col. 2.

formation must be more widely disseminated and must be more readily available to the public in a form that is neither too technical nor too simplistic.

France, the United States, and the world need more than energy conservation and an alternative energy program in the near future: that conclusion is inescapable. A complete withdrawal from nuclear energy, even if commercially viable, would be impractical and unrealistic. We must therefore use the resources available to us, and make the best of a difficult situation.