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State Participation in the Disposal of High-Level Nuclear Waste

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ESSAY

STATE PARTICIPATION IN THE DISPOSAL OF HIGH-LEVEL NUCLEAR WASTE*

I. INTRODUCTION

Until the late 1960's, the federal government and the nuclear industry believed that the technology needed for the safe storage of nuclear waste would be developed.[1] Such technological breakthroughs have yet to occur. Not being discouraged, the Atomic Energy Commission (AEC) announced in 1970 that it would construct a federal waste repository in an abandoned salt mine near Lyons, Kansas.[2] Unfortunately, the project was abandoned when geological evidence revealed technological problems with the site.[3] The failure of the Kansas repository, coupled with the discovery in 1973 that 115,000 gallons of highly radioactive liquid waste leaked out of storage tanks at Hanford, Washington,[4] caused many people to question the federal government's ability to deal with the waste problem.[5]

Nevertheless, the federal government and the nuclear industry remained steadfast in their belief that a method of reprocessing spent fuel

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1. H.R. REP. No. 491, 97th Cong., 2d Sess. 26, 27, *reprinted in* 1982 U.S. CODE CONG. & AD. NEWS 3792, 3793.

2. COMPTROLLER GENERAL OF THE UNITED STATES, NUCLEAR ENERGY'S DILEMMA: DISPOSING OF HAZARDOUS RADIOACTIVE WASTE SAFELY 8 (1977) [hereinafter cited as COMPTROLLER GENERAL].

3. *Oversight Hearings on Nuclear Waste Management Before the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs*, 95th Cong., 1st Sess. 72 (1977) (statement by Dr. Terry Lash) [hereinafter cited as *1977 Hearings*]. There were abandoned and uncapped oil and gas exploration wells in the vicinity of the salt bed. Those wells probably could not have been capped in such a way as to insure that water would not follow the wells down and intrude into the salt bed, creating the possibility of radioactivity leakage. *Id.*

4. In 1973 a sustained leak totalling 115,000 gallons went undetected for fifty-five days, even though levels in the tanks were being recorded daily; no one compared each day's readings with the reading of the day before. Polsgrove, *Where Will We Dump the Nuclear Trash? Not in My Backyard*, THE PROGRESSIVE, Mar. 1983, at 22, 26.

5. H.R. REP. No. 491, 97th Cong., 2d Sess. 27, *reprinted in* 1982 U.S. CODE CONG. & AD. NEWS 3792, 3793.

would be developed in the near future.[6] In the mid 1970's, however, reprocessing was determined to be economically unfeasible.[7] Furthermore, the presence of plutonium, a by-product of reprocessing, caused concern over the potential for proliferation of nuclear weapons. These concerns caused Presidents Ford[8] and Carter to suspend further development of advanced plutonium fuel based reactors and spent fuel reprocessing plants.[9]

That suspension, however, caused much concern in the states in which potential repository sites were located. The nuclear industry had been suddenly confronted not only with a shift in its technological future but also with an unanticipated liability in the form of spent fuels stored at reactor sites. The absence of permanent storage sites heightened public concern because reactor sites were not designed for lifetime storage of nuclear waste.[10] The natural response of the states was to try to prevent the disposal of nuclear waste within their borders.[11] However, the states were unable to achieve this goal because the Atomic Energy Act of 1954[12] and its 1959 amendment[13] gave the states little power to regulate in this area. This situation changed in 1983 with the passage of the Nuclear Waste Policy Act of 1982 (Nuclear

6. Spent fuel rods removed from reactor cores can be reprocessed to remove unfissionable isotopes of plutonium and uranium which can be reused as reactor fuel. REPORT OF THE NUCLEAR ENERGY POLICY STUDY GROUP, NUCLEAR POWER ISSUES AND CHOICES 247-49 (1977) [hereinafter cited as NUCLEAR POWER].

7. It was determined not to be economical to fabricate light water reactor fuel using recovered uranium. In addition, the cost of management and disposal of wastes from reprocessing facilities had been underestimated. Two full-sized reprocessing plants and one pilot facility were retired — one of the full-sized facilities before it ever operated — and another company's plans for construction of a facility were canceled by 1976. H.R. REP. No. 491, 97th Cong., 2d Sess. 27, *reprinted in* 1982 U.S. CODE CONG. & AD. NEWS 3792, 3793.

8. President Ford requested that the NRC halt proceedings for the licensing of mixed oxide fuel recycle. *Id.* at 27, *reprinted in* 1982 U.S. CODE CONG. & AD. NEWS at 3793-94.

9. In 1977, the Carter administration adopted two policies in its effort to find a solution to what it perceived as a world-wide problem of proliferation. First, the United States would indefinitely defer commercial reprocessing and recycling of plutonium, as well as the commercial introduction of the plutonium breeder. Second, President Carter proposed to reduce the funding for the breeder program existing at the time and to redirect it toward evaluation of alternative breeders, advanced converter reactors and other fuel cycles, with emphasis on nonproliferation and safety concerns. EXECUTIVE OFFICE OF THE PRESIDENT, ENERGY POLICY AND PLANNING, THE NATIONAL ENERGY PLAN 70 (1977).

10. H.R. REP. No. 491, 97th Cong., 2d Sess. 27, *reprinted in* 1982 U.S. CODE CONG. & AD. NEWS 3792, 3794.

11. *See* cases cited *infra* notes 66-68.

12. Atomic Energy Act of 1954, 42 U.S.C. §§ 2011-2296 (1976) (current version at 42 U.S.C.A. §§ 2011-2296 (West Supp. 1984)).

13. Act of Sept. 23, 1959, Pub. L. No. 86-373, § 1, 73 Stat. 688 (codified as amended at 42 U.S.C.A. § 2021 (West Supp. 1984)).

Waste Policy Act),[14] which granted states the power to participate in the important decisions surrounding the construction of nuclear waste repositories.[15]

This Essay explores the ability of any affected states to participate in the decision to dispose of nuclear waste under the Atomic Energy Act and the Nuclear Waste Policy Act.[16] In addition, the controversy over the validity of the Department of Energy's (DOE) research underlying its plan to build a nuclear waste repository at the Hanford site is evaluated.[17] The Essay concludes that the Nuclear Waste Policy Act was promulgated because of the Atomic Energy Act's failure to grant the states a role in the decision to dispose of nuclear waste. It further concludes that state participation is indispensible in evaluating the DOE's important decisions leading up to the construction of a nuclear waste repository.

II. NUCLEAR WASTE TECHNOLOGY

There are three types of radioactive waste associated with nuclear electric power: low-level waste, spent fuel and high-level waste. Low-level waste is material that is not originally radioactive but has become so through exposure to radioactive products.[18] This type of waste includes all of the equipment and clothing that have become radioactive.[19] Because of its low radiation, low-level waste is not subject to the special regulatory requirements that control high-level waste.[20]

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14. Nuclear Waste Policy Act of 1982, 42 U.S.C. §§ 10,101-226 (1982).

15. *See infra* notes 102-112 and accompanying text.

16. *See infra* notes 66-123 and accompanying text.

17. *See infra* notes 124-147 and accompanying text.

18. *1977 Hearings*, *supra* note 3, at 3 (statement of Dr. Charles Hebel).

19. OFFICE OF NUCLEAR WASTE ISOLATION, U.S. DEP'T OF ENERGY, ANSWERS TO YOUR QUESTIONS ABOUT HIGH-LEVEL NUCLEAR WASTE ISOLATION 3 (1982).

20. In 1980 Congress passed the Low-Level Radioactive Waste Policy Act, Pub. L. No. 96-573, §§ 2-4, 94 Stat. 3347 (codified at 42 U.S.C. § 2021b-d (1982)) which granted each state the responsibility for providing disposal capacity for low-level waste generated within its borders. Section 2021d states:

> (a)(1) It is the policy of the Federal Government that—
>
> (A) each State is responsible for providing for the availability of capacity either within or outside the State for the disposal of low-level radioactive waste generated within its borders except for waste generated as a result of defense activities of the Secretary or Federal research and development activities; and
>
> (B) low-level radioactive waste can be most safely and efficiently managed on a regional basis.
>
> (2)(A) To carry out the policy set forth in paragraph (1), the States may enter into such compacts as may be necessary to provide for the establishment and operation of regional disposal facilities for low-level radioactive waste.

Id. § 2021d.

Spent fuel is the discharged material from the core of a nuclear plant. This material has not been defined as high-level waste by any federal statute or regulation. However, because of its radioactivity, the same safeguards that apply to high-level waste apply to spent fuel.[21]

High-level waste consists of the by-products of nuclear reaction in the fuel of both commercial and defense reactors.[22] This type of waste emits radioactivity that could be harmful both to humans and the environment unless the waste is properly isolated. High-level waste undergoes a decaying process and must be isolated from the environment until the radioactivity decays to levels that will pose no significant threat to humans or to the environment.[23] Isolation for a period of 10,000 years is considered to be reasonably necessary in order to achieve that objective.[24]

High-level waste is stored temporarily in surface tanks located at the nuclear power plant and is the responsibility of each nuclear facility.[25] When a permanent solution to the nuclear waste problem is developed, the responsibility for the storage of the waste will be transferred to the federal government.[26]

There have been many proposals for the permanent disposal of high-level waste. Transmutation of the waste into shorter-lived radioactive materials,[27] oceanic disposal,[28] extraterrestrial disposal[29] and

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21. COMPTROLLER GENERAL, *supra* note 2, at ii.

22. OFFICE OF NUCLEAR WASTE ISOLATION, *supra* note 19, at 1.

23. *Id.* at 3.

24. *Id.*

25. Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10,151(a)(1) (1982). Subsection (a)(1) states:

> [T]he persons owning and operating civilian nuclear power reactors have the primary responsibility for providing interim storage of spent nuclear fuel from such reactors, by maximizing, to the extent practical, the effective use of existing storage facilities at the site of each civilian nuclear power reactor, and by adding new onsite storage capacity in a timely manner where practical . . . .

Id.

26. *Id.* § 10,131(a)(5).

27. *1977 Hearings*, *supra* note 3, at 5 (statement of Dr. Charles Hebel). This process transforms radioactive elements into shorter-lived radioactive elements by bombarding them with neutrons. However, this process is technically quite difficult, and hazardous as well. *Id.*

28. This process is not feasible as there is no known container which will withstand the corrosive effects of seawater for the necessary time period. Since the residence time of deep water is only of the order of 100-1000 years, long lived wastes from broken containers would mix with the upper, biologically active layers and thus enter the food chain. Emplacement of canisters in the thick clay materials of the deep ocean is subject to many uncertainties about possible thermal currents and sediment behavior as well as risks associated with extended sea transport and emplacement in water of five kilometers depth. NUCLEAR POWER, *supra* note 6, at 255.

29. Extraterrestrial disposal would be prohibitively expensive and carries the risk of radioac-

placement in water-cooled canals[30] have been suggested. To date, the most viable option is the disposal of nuclear waste in waste repositories.[31] These repositories must be built in geologic formations which have little or no water circulation but which do have natural boundaries, which prevent the nuclear waste from entering the environment.[32] These characteristics are found in the salt formations[33] in the Louisiana and Mississippi region and in the volcanic rock formations in the Nevada and Washington area.[34]

III. LEGISLATION OF THE NUCLEAR ERA

A. *Atomic Energy Act*

The first legislation to address the issue of nuclear activity was the Atomic Energy Act of 1946.[35] This act established a scheme of total federal control, including federal ownership of all fissionable material,

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tive release on unsuccessful launch attempts. G. EICHHOLZ, ENVIRONMENTAL ASPECTS OF NUCLEAR POWER 616 (1977).

30. *Id.* at 590. Although water-cooled canals and air-cooled vaults would provide good interim storage because of their heat-removal capabilities, they, too, are undesirable as long-term disposal methods because of the constant surveillance required and the accident and sabotage risks posed. *Id.*

31. OFFICE OF NUCLEAR WASTE ISOLATION, U.S. DEP'T OF ENERGY, LEAFLET, WHAT A NUCLEAR WASTE REPOSITORY LOOKS LIKE (1982). Conceptual designs of repositories have been completed. From the surface, a nuclear waste repository would resemble a relatively large mine. There would be railroad siding, facilities for deep excavation and buildings for unloading, handling and repackaging nuclear waste prior to isolation. From the surface, several vertical shafts would lead to tunnel-like storage zones about half a mile deep. Sealed in cannisters and further protected by appropriately engineered barriers, the wastes would be placed in holes excavated along the tunnels. As each storage zone is filled, the idles, tunnels and shafts would be backfilled and sealed. *Id.*

32. *1977 Hearings*, *supra* note 3, at 5-7 (statement of Dr. Charles Hebel). In deep geological burial, the waste containers are not exposed to corrosive elements of water or air. More importantly, however, the containers are supplemented by the geological barrier, which is by far more enduring.

A committee of the National Academy of Sciences recommended burial of radioactive waste in underground salt beds to be their medium of first choice, and certain other geologic media also were deemed to be good potential sites. The American Physical Society study group concurred with the National Academy and concluded that a waste repository can be developed in accord with appropriate site selection criteria that would insure low probability that erosion, volcanism, meteorite impact or other natural events could breach the repository. The Physical Society similarly found that bedded salt can be a satisfactory medium for a repository, and concluded further that certain other rock types, notably granite and possibly shale, could offer even greater long-term advantages. *Id.*

33. NUCLEAR POWER, *supra* note 6, at 256. The presence of salt at the site indicates the absence of circulating groundwater, which is the principle mechanism of transporting waste to the surface. *Id.*

34. *See infra* note 137.

35. Atomic Energy Act of 1946, 42 U.S.C. §§ 1801-1819 (1946) (current version at 42 U.S.C.A. §§ 2011-2296 (West Supp. 1984)).

and created the Atomic Energy Commission (AEC).[36] Later, when President Eisenhower decided it was time to transform nuclear power into a source of energy for America, the Atomic Energy Act of 1954[37] was passed with the purpose of encouraging widespread private participation in the use and development of atomic energy.[38]

As the nuclear industry began to develop in response to the Atomic Energy Act of 1954, some states began to issue regulations.[39] The AEC disapproved of this state action and took the position that states were preempted from regulating the nuclear industry. Nevertheless, Congress recognized the need for state participation in the development of nuclear energy and in 1959 amended the Atomic Energy Act to clarify the respective state and federal roles in this field.[40]

The 1959 amendment to the Atomic Energy Act was promulgated for the purpose of organizing regulatory parameters for the nuclear industry while concurrently recognizing state and federal interests. To accomplish this goal, the AEC was given the power to promote the research and development of nuclear energy and to consider public health and safety in the exercise of its regulatory responsibility. The states, on the other hand, were given the power over the generation, sale and transmission of electric power produced through the use of nuclear facilities.[41] Additionally, the amendment allowed the states to assume certain licensing and regulatory responsibilities pursuant to a turnover agreement[42] between the state's governor and the AEC. However, there were many limitations placed on these agreements. For example, state authority to regulate is limited to the duration of the agreement.[43] Once the agreement is terminated, state authority ceases

36. The AEC was abolished by the Energy Reorganization Act of 1974. Its responsibilities were given to the ERDA and the NRC. *See infra* note 50 and accompanying text.

37. Atomic Energy Act of 1954, 42 U.S.C. §§ 2011-2296 (1976) (current version at 42 U.S.C.A. §§ 2011-2296 (West Supp. 1984)).

38. In passing the 1954 Act, Congress opined that the goal of atomic power at competitive prices would be reached more quickly if private enterprise, using private funds, was encouraged to play a far larger role in the development of atomic power than was presently being permitted under existing legislation. Congress "[did] not believe that any developmental program carried out solely under governmental auspices, no matter how efficient it may be, [could] substitute for the cost-cutting and other incentives of free and competitive enterprise." S. REP. No. 1699, 83d Cong., 2d Sess. 3, *reprinted in* 1954 U.S. CODE CONG. & AD. NEWS 3456, 3459.

39. For a description of state regulatory activity during this period, see Frampton, *Radiation Exposure—The Need for a National Policy*, 10 STAN. L. REV. 7, 29-40 (1957).

40. Act of Sept. 23, 1959, Pub. L. No. 86-373, § 1, 73 Stat. 688 (current version at 42 U.S.C.A. § 2021 (West Supp. 1984)).

41. Atomic Energy Act of 1946, 42 U.S.C. § 2018 (1982); *see infra* note 82.

42. 42 U.S.C. § 2021(b).

43. *Id.*

and federal authority resumes. State regulatory standards promulgated pursuant to such an agreement have to be coordinated and compatible with federal standards.[44] In other words, the courts have prohibited the states from promulgating radiation protection standards that are more stringent than those of the AEC.

The most extensive limitation on state regulatory power is section 2021(c) of the 1954 Act which prevents states from entering into a turnover agreement with the AEC[45] concerning the following subjects:

1. the construction and operation of any production or utilization facility;
2. the export from or import into the United States of byproduct, source, or special nuclear material, or of any production or utilization facility;
3. the disposal into the ocean or sea of byproduct, source, or special nuclear waste materials as defined in regulations or orders of the Commission;
4. the disposal of such other byproduct, source, or special nuclear material as the Commission determines by regulation or order should because of the hazards or potential hazards thereof, not be so disposed of without a license from the Commission.[46]

The Joint Commission on Atomic Energy explained that these excluded areas are of a complex and technical nature, are closely intertwined with the safety of the country, and can be best dealt with by federal resources.[47] Furthermore, these subjects are public policy mat-

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44. *Id.* § 2021(g) (1982). Subsection (d) provides that

> [t]he Commission shall enter into an agreement . . . with any State if . . . the Commission finds that the State program is . . . compatible with the Commission's program for the regulation of [the hazardous materials covered by a proposed agreement], and that the State program is adequate to protect the public health and safety with respect to [such materials].

Id. § 2021(d).

Although minor additional prerequisites to turnover do exist, such as subsection (e)'s requirement that the terms of a proposed agreement be published in the Federal Register, the important requirements are compatibility and adequacy. In explaining the meaning of the compatibility requirement, the committee report makes it clear that this means "identical," except for minor variations such as terminology or periods for measuring maximum permissible exposures. The committee had removed the language "to the extent feasible" so that there would be no danger of "conflicting, overlapping, and inconsistent standards in different jurisdictions, to the hinderance of industry and jeopardy of public safety." SEN. REP. NO. 870, 86th Cong., 1st Sess. 11, *reprinted in* 1959 U.S. CODE CONG. & AD. NEWS 2872, 2879; Estep & Adelman, *State Control of Radiation Hazards: An Intergovernmental Relations Problem*, 60 MICH. L. REV. 41, 65 (1961).

As to the adequacy of the state program to protect the public health and safety, "Congress seems to be concerned only that the AEC find that there is a large enough staff of well-qualified state personnel to assure protection against health hazards." *Id.* at 65-66.

45. Atomic Energy Act of 1946, 42 U.S.C. § 2021(c) (1982).

46. *Id.* § 2021(c)(1)-(4).

47. The Joint Commission stated that in most cases, it intended state and local standards to

ters which should be handled by the federal government.[48]

B. *Energy Reorganization Act*

In 1974, the Energy Reorganization Act[49] was promulgated due to Congress' concern that the AEC could not perform the function of promotor of the nuclear industry and at the same time protect public health and safety. Accordingly, the Atomic Energy Commission was abolished by the Act and its responsibilities were divided between the Energy Research and Development Agency (ERDA) and the Nuclear Regulatory Commission (NRC).[50] The ERDA was given responsibility for the research and development of various sources of energy. It was specifically assigned the task of encouraging and conducting research and development in the field of nuclear energy. The NRC, composed of five members, was given responsibility for all the licensing and related regulatory matters previously performed by the AEC. To carry out its responsibility, the NRC was given the authority to enter into turnover agreements with states.[51]

C. *Department of Energy Organization Act*

The regulatory scenario was not completed until 1977 when the Department of Energy Organization Act was passed.[52] The 1977 Act had two purposes. First, it was to reaffirm the goal expressed in the 1974 Energy Reorganization Act of a balanced energy source development. Second, it was to declare an intent to place major emphasis on development of the commercial use of solar and geothermal energy, recycling, and other technologies.[53] In order to carry out the purpose of the 1977 Act, the ERDA was abolished and all of its functions were given to the DOE.[54] In addition, the DOE was given the responsibility for nuclear waste management.[55] The drafters of the Act thought that by giving the DOE this responsibility a centralized waste management

be the same as federal standards to avoid conflict, duplication or gaps. S. REP. No. 870, 86th Cong., 1st Sess. 9, 11, *reprinted in* 1959 U.S. CODE CONG. & AD. NEWS 2872, 2882.

48. *Id.*

49. 42 U.S.C. §§ 5801-5891 (1976) (current version at 42 U.S.C. §§ 5801-5891 (1982)).

50. *Id.* §§ 5813, 5814(a), (b), 5841(f), 5842(3), (4).

51. *Id.* § 5842(3), (4).

52. 42 U.S.C.A. §§ 7101-7352 (West Supp. 1977) (current version at 42 U.S.C. §§ 7101-7352 (1982)).

53. *Id.* § 7112(6).

54. 42 U.S.C. §§ 7112-7113, 7131-7133 (1982).

55. *Id.* § 7133(a)(8)(C).

program would develop.[56] This development, however, did not occur since responsibility for achieving safe handling and disposal of waste is presently shared by the Department of Energy, the Nuclear Regulatory Commission and the Environmental Protection Agency.[57]

D. *State Regulation of Nuclear Energy Activity for Purposes Other Than Radiation Hazards*

Of the few preemption cases in the nuclear field, *Northern States Power Co. v. Minnesota*[58] was the first case that dealt with a claim that a state law purporting to regulate nuclear power plants was preempted by the Atomic Energy Act. In *Northern States*, the Eighth Circuit, in a controversial decision, overturned the Minnesota Pollution Control Agency's denial of a waste disposal permit needed in order to operate a nuclear power plant, holding that the Atomic Energy Act implicitly preempts state regulation of radiation hazards.[59] Many critics of the decision felt that the court went too far in limiting the state of Minnesota's power since states are given the authority to "regulate nuclear activities for purposes other than the protection against radiation hazards" under section 2021(k) of the Atomic Energy Act.[60] The language of this section requires a reviewing court to inquire into the purpose of the state action to determine if it falls under the purview of section 2021(k). The court in *Northern States* failed to make this determination.

In *Northern California Association to Preserve Bodega Head and*

56. The Committee on Governmental Affairs, to which the bill establishing the DOE was referred for passage, sought through passage of the Act to centralize and coordinate at a high level in the DOE the following responsibilities: establishment of control over existing government facilities for the treatment and storage of nuclear wastes; establishment of control over all existing nuclear waste in the possession or control of the government as well as all commercial nuclear waste being stored at that time on sites other than licensed nuclear power electric generating facilities; establishment of temporary and permanent storage facilities; and establishment of facilities for the treatment of nuclear wastes. S. REP. No. 164, 95th Cong., 1st Sess. 23, *reprinted in* 1977 U.S. CODE CONG. & AD. NEWS 854, 877.

57. The National Environmental Policy Act of 1969 established the Environmental Protection Agency (EPA), which has certain regulatory authority with respect to radioactive wastes. 42 U.S.C. §§ 4321-4347 (1976) (current version at 42 U.S.C. §§ 4321-4347 (1982)).

Under Reorganization Plan No. 3 of 1970, 3 C.F.R. 1072 (1966-1970 comp.) *reprinted in* 5 U.S.C. app. § 2(a)(6) (1982), the EPA is authorized to establish "[g]enerally applicable environmental standards for the protection of the general environment from radioactive material."

58. 447 F.2d 1143 (8th Cir. 1971), *aff'd mem.*, 405 U.S. 1035 (1972).

59. *Id.* at 1154.

60. 42 U.S.C. § 2021(k) (1982). "[Subsection k] is intended to make it clear that the bill does not impair the State authority to regulate activities of AEC licensees for the manifold health, safety, and economic purposes other than radiation protection." S. REP. No. 870, 86th Cong., 1st Sess. 9, 12, *reprinted in* 1959 U.S. CODE CONG. & AD. NEWS 2872, 2882.

Harbor v. Public Utilities Commission,[61] the Supreme Court of California made the proper inquiry as required by section 2021(k). The court allowed the State of California to restrict the building of a nuclear power plant in an earthquake zone even though the state's concern was that an earthquake would result in a radiation hazard. The court reasoned that California could restrict the construction of the plant pursuant to section 2021(k) since safety considerations in addition to radiation hazards were involved.[62] In *Marshall v. Consumers Power Co.*,[63] the Michigan Court of Appeals, in a case brought by a state resident alleging that a nuclear power plant's cooling system constituted a nuisance by creating fogging and icing, held that these effects were not radiation hazards and thus were proper subjects for state regulation.[64] However, the court held that it could not consider the effectiveness of the plant's cooling system since it directly involved a radiation hazard and states are implicitly preempted from regulating this type of hazard under the holding of *Northern States*.[65] These two cases indicate that state regulation for purposes other than radiation hazards is not preempted by the Atomic Energy Act even though they have the effect of regulating radiation hazards.

E. *State Regulation of Nuclear Waste Disposal Under the Atomic Energy Act*

Few cases have dealt with states' rights to regulate the disposal of nuclear waste. Those cases that have dealt with the issue failed to resolve the important question of whether or not states can regulate nuclear waste disposal pursuant to section 2021(k) of the Atomic Energy Act for purposes other than for the protection against radiation hazards. For instance, in *Illinois v. Kerr-McGee Chemical Corp.*,[66] the

61. 61 Cal. 2d 126, 390 P.2d 200, 37 Cal. Rptr. 432 (1964).

62. *Id.* at 133, 390 P.2d at 206, 37 Cal. Rptr. at 438.

63. 65 Mich. App. 237, 237 N.W.2d 266 (1975).

64. *Id.* at —, 237 N.W.2d at 274-75.

65. *Id.* at —, 237 N.W.2d at 274.

66. 677 F.2d 571 (7th Cir.), *cert. denied,* 103 S. Ct. 469 (1982). The disposal site was located near the city of West Chicago, which alleged that the disposal site's operation constituted a public nuisance. The city sought injunctive relief. The district court rejected the city's argument that the relief sought was not barred by federal preemption because the AEA did not extend to "municipal regulations of non-radiological health, safety and welfare violations."

The United States Court of Appeals for the Seventh Circuit reversed the district court's ruling. The court, relying on the reasoning of the Ninth Circuit Court of Appeals in Pacific Legal Found. v. State Energy Resources Conservation & Dev. Comm'n, 659 F.2d 903 (9th Cir. 1981), held that "[r]egulation of non-radiation hazards by the states or their political subdivisions has not . . . been preempted." *Kerr-McGee Chemical Corp.*, 677 F.2d at 581. The court remanded the

state of Illinois sought to prosecute a waste disposal operator for violation of the state public nuisance, pollution and refuse disposal laws. In reversing the operator's previously granted motion to dismiss, the court reaffirmed *Northern States*, holding that the NRC has exclusive authority to regulate radiation hazards unless the state has an agreement under which it is to assume some of the responsibility.[67] In *Washington State Building & Construction Trades Council v. Spellman*,[68] the court held that an initiative passed by voters of the state of Washington to bar the importation of certain wastes into their state was unconstitutional.[69] The court stated that Congress realized that transportation and storage of nuclear materials were radiation hazards which should be regulated by the federal government except in instances where jurisdiction had been expressly ceded to the states.[70] The court further held that the ban was an impermissible burden on interstate commerce.[71] These cases confirm the restriction of state power to regulate nuclear waste disposal when the decision to regulate is based on protection against radiation hazards. They do not, however, clarify the legality of states' power to regulate nuclear waste disposal for purposes other than radiation hazards.

In April, 1983, the Supreme Court of the United States shed some light on this issue when it rendered a decision which acknowledged the problems of nuclear waste disposal. In *Pacific Gas & Electric Co. v. State Energy Resources Conservation & Development Commission*,[72] the Supreme Court dealt with the issue of whether provisions in the 1976 amendments to certain sections of California's Warren-Alquist Act which condition the construction of nuclear plants on findings by a California state commission that adequate storage facilities and means of disposal are available for nuclear waste, are preempted by the Atomic Energy Act. The Court held that the California statute was not preempted by the Atomic Energy Act because the statute was not designed to provide protection against radiation hazards. Rather, it

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case to the district court for a determination of whether the city sought to regulate radiation or non-radiation hazards. *Id.* at 584.

67. *Id.* at 581.

68. 518 F. Supp. 928 (E.D. Wash. 1981), *aff'd,* 684 F.2d 627 (9th Cir. 1982), *cert. denied,* 103 S. Ct. 1891 (1983).

69. *Id.* at 935.

70. *Id.* at 931.

71. *Id.* at 933.

72. 103 S. Ct. 1713 (1983).

was adopted because the uncertainties in the fuel cycle[73] make nuclear power an uneconomical and uncertain source of energy.[74] Furthermore, the Court agreed with the assessment of the committee which had introduced the statute that the lack of a federally approved method of waste disposal created a clog in the fuel cycle since nuclear wastes are continually produced without a permanent means of disposal.[75] This clog can become critical, leading to unpredictably high costs to contain the problem, or worse, to reactor shutdown.[76] Finally, the Court stated that the promotion of nuclear power is not to be accomplished at all costs.[77] The states can choose which source of power to use when generating electricity.[78] Therefore, the states can reject nuclear energy and prevent the construction of a nuclear power plant if the decision is based on economic considerations.[79]

The *Pacific Gas & Electric* case was an important decision since it was the first case to recognize the problems associated with nuclear waste disposal. The Supreme Court considered waste disposal to be such a grave problem that it held permissible state action that prevented the construction of a nuclear power plant until the state determined that there was an appropriate method of disposal.

Another innovation of the Supreme Court ruling is that states can prevent the construction of a nuclear power plant pursuant to section 2021(k)[80] if the decision is based on economic considerations. In other words, economic considerations fall within the meaning of section 2021(k) which allows states to regulate for purposes other than for protection against radiation hazards. Prior to this case, the only interpretation of this section was that states could regulate nuclear activities pursuant to their zoning law powers.[81]

The Supreme Court in *Pacific Gas & Electric* did not address the issue of whether states could regulate nuclear waste disposal activities

73. The fuel cycle for nuclear plants begins with the mining process and ends when the nuclear waste is safely disposed.

74. *Pacific Gas & Elec.*, 103 S. Ct. at 1720, 1728.

75. *Id.* at 1727.

76. *Id.*

77. *Id.* at 1731.

78. The Court states: "Congress has allowed the States to determine . . . whether a nuclear plant vis-a-vis a fossil fuel plant should be built." *Id.*

79. *Id.* at 1732.

80. 42 U.S.C. § 2021(k) (1982) states: "Nothing in this section shall be contrued to affect the authority of any State or local agency to regulate activities for purposes other than protection against radiation hazards."

81. Northern Cal. Ass'n to Preserve Bodega Head and Harbor v. Public Utils. Comm'n, 61 Cal. 2d 126, 390 P.2d 200, 37 Cal. Rptr. 432 (1964).

for purposes other than protection against radiation hazards pursuant to section 2021(k). Nevertheless, it could be logically inferred that states have this power since no provision in the Atomic Energy Act expressly prevents the states from regulating waste disposal activities. However, states' power to regulate nuclear activities, after the passage of the 1959 amendment, is limited to those powers expressly ceded to the states in the Atomic Energy Act or to those specified in a turnover agreement entered into between a state and the NRC.

The provisions in the Act that grant the states power to regulate nuclear activities are sections 2018[82] and 2021.[83] Section 2018 grants states authority over the sale, generation or transportation of electric power generated from nuclear power plants. It does not grant states the authority to regulate the disposal of nuclear waste. Section 2021(k)[84] states: "Nothing in this section shall be construed to affect the authority of any State or local agency to regulate activities for purposes other than protection against radiation hazards." This section does not provide for state regulation of nuclear waste disposal for purposes other than protection against radiation hazards because section 2021(k) is not an affirmative grant of power to the states.[85] Rather, the section was promulgated to underscore the distinction drawn in the 1954 Act between the spheres of activity left respectively to the federal government and the states.[86]

Finally, section 2021(b) authorizes the NRC to enter into a turnover agreement with the states allowing the states to regulate specific nuclear activities under limited conditions.[87] The subject matter of these agreements is limited by section 2021(c). One such limitation is that the Commission shall retain authority over and responsibility for the disposal of such by-products, source, or special nuclear materials as the Commission determines.[88] Since NRC regulations specify that it

82. Atomic Energy Act of 1954, 42 U.S.C. § 2018 (1982) states:

> Nothing in this chapter shall be construed to affect the authority or regulations of any Federal, State, or local agency with respect to the generation, sale, or transmission of electric power produced through the use of nuclear facilities licensed by the Commission: *Provided*, That this section shall not be deemed to confer upon any Federal, State, or local agency any authority to regulate, control, or restrict any activities of the Commission.

Id.

83. *Id.* § 2021.
84. *Id.* § 2021(k).
85. *Pacific Gas & Elec.*, 103 S. Ct. at 1725.
86. *Id.*
87. Atomic Energy Act of 1954, 42 U.S.C. § 2021(b) (1982).
88. *Id.* § 2021(c)(4).

retains regulatory authority over the transfer, storage and disposal of high-level waste,[89] states are preempted from regulating these wastes pursuant to a turnover agreement. Because sections 2018 and 2021(k) do not grant the states the power to regulate nuclear waste disposal and the states are prevented from entering into a turnover agreement with the NRC concerning this matter, the states are preempted under the Atomic Energy Act from regulating nuclear waste disposal.

In conclusion, the Atomic Energy Act does not grant a state the authority to regulate nuclear waste disposal activities. If a state attempts to regulate this type of activity it would be preempted under the Supremacy Clause. Nevertheless, Congress recognized that nuclear waste disposal was becoming the focal point of the nuclear debate and that there was an imminent need for cooperation between the federal government and state governments to solve this problem. Subsequently, the Nuclear Waste Policy Act[90] was passed by Congress in December, 1982, and was signed into law by the President in January, 1983, to deal with such issues.

IV. NUCLEAR WASTE POLICY ACT

A. *Background*

In the final days of the 97th Congress, the House and the Senate passed the Nuclear Waste Policy Act with the intention of developing a cooperative effort by the federal and state governments to overcome the problem of nuclear waste disposal. The Nuclear Waste Policy Act affirmed the federal role in the research and development of nuclear waste disposal[91] and provided for state and public participation in the decision process concerning disposal of the waste.[92] More importantly, the Act granted states the power to veto the decision of the federal government to construct a nuclear waste repository within the states' borders.[93] This veto, however, could be overridden by a joint resolution of

89. Continued Commission Regulatory Authority in Agreement States, 10 C.F.R. § 150.15(a)(4) (1978).

90. Nuclear Waste Policy Act of 1982, 42 U.S.C. §§ 10,101-226 (1982).

91. *Id.* § 10,131(a)(4), 10,131(b)(2).

92. *Id.* § 10,131(a)(6), 10,131(b)(3).

In addition to providing for state participation, the Nuclear Waste Policy Act provides for participation of "affected Indian tribes." *Id.* § 10,138. For a definition of an "affected Indian tribe," see *id.* § 10,101(2).

This Essay will only discuss states' abilities to participate in nuclear waste disposal. It should be noted, however, that "affected Indian tribes" have authority similar to that given to states.

93. *Id.* § 10,136(b) provides:

Congress.[94]

The Act is divided into three titles that deal, respectively, with disposal,[95] research and development,[96] and the financing of a nuclear waste repository.[97] The remainder of this Essay will focus on the process of choosing a site suitable for the development of a repository, the state role in this decision process and the DOE's present attempt to build a repository at the Hanford, Washington site.

B. *Site Selection Process*

The selection of a site suitable for the construction of a nuclear waste repository is a multistepped process which is outlined in chronological order in Appendix A. This process can be separated into two basic stages. The first stage involves the selection of a site which is suitable for site characterization activities.[98] Site characterization is the drilling and testing of the geologic medium to determine if the site has the necessary qualities to house a repository.[99] The second stage involves the analysis of the site characterization results and the selection of a site suitable for the construction of a repository.[100] It is during this latter stage of the decision process that a state has the power to veto the decisions of the Secretary of the Department of Energy and the Presi-

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(1) Unless otherwise provided by state law, the Governor or legislature of each State shall have authority to submit a notice of disapproval to the Congress under paragraph (2).

. . . (2) Upon the submission by the President to the Congress of a recommendation of a site for a repository, the Governor or legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval. . . . Such notice of disapproval shall be accompanied by a statement of reasons explaining why such Governor or legislature disapproved the recommended repository site involved.

Id.

94. *Id.* § 10,135(a).

95. *Id.* §§ 10,121-171.

96. *Id.* §§ 10,191-203.

97. *Id.* §§ 10,221-226.

98. *Id.* § 10,132.

99. *Id.* § 10,101(21).

The term "site characterization" means—

(A) siting research activities with respect to a test and evaluation facility at a candidate site; and

(B) activities, whether in the laboratory or in the field, undertaken to establish the geologic condition and the ranges of the parameters of a candidate site relevant to the location of a repository, including borings, surface excavations, excavations of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing needed to evaluate the suitability of a candidate site for the location of a repository, but not including preliminary borings and geophysical testing needed to assess whether site characterization should be undertaken.

Id.

100. *Id.* §§ 10,133-141.

dent to build a repository.[101] As previously stated, the state veto can be overridden by a joint resolution of Congress.[102]

C. *State Participation Under the Nuclear Waste Policy Act*

The original purpose of the Nuclear Waste Policy Act was to grant affected states a limited right to participate in the decision to construct and operate a nuclear waste repository. Consequently, the drafters of the Act were against granting states a veto right since this would give them more power than originally intended, but due to political pressure, the veto provision was included.[103] In addition to the power that is expressly derived from a veto, the states received the implicit power of the threat of a veto. This implicit power will benefit the states' bargaining position more than the veto itself. This benefit arises because a state veto triggers additional procedural steps which will result in a delay in the completion of a repository.[104] A lengthy delay can be critical to timely completion since it allows those who are opposed to construction of a repository the time to organize, resulting in additional legal problems. Therefore, to avoid these delays, the Secretary will have to work closely with the states in order to alleviate their concerns.

Before a final decision to construct a waste repository is made, states have many opportunities to participate with the DOE in the decision process. The first opportunity occurs before the Secretary recommends to the President those sites that he has determined to be suitable for site characterization activities. The Secretary notifies the governor

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101. *See supra* note 93.

102. *See supra* note 94.

103. Carter, *The Radwaste Paradox*, 219 SCIENCE 33, 34 (Jan. 7, 1983).

> The main barrier to final passage was lifted when Senator James McClure (R-Idaho), chairman of the Energy and Natural Resources Committee, yielded to the threat of a filibuster on an issue deemed of critical importance by potential repository host states. Their position was that, if a repository site selected for licensing application by the Department of Energy (DOE) and the President should be unacceptable to the host state, its "veto" of the site should stand unless overridden by both houses of Congress.
>
> Although there was substantial congressional support for this position, the bills first passed by the House and Senate had not gone that far, each body having chosen instead to give the host states a veto that would stand only if sustained by at least one house of Congress. But Senator William Proxmire, whose home state of Wisconsin contains granite formations that are of interest to DOE, was able to take advantage of the lateness of the hour by threatening to filibuster unless the state position was accepted.
>
> McClure, as Senate manager of the legislation, chose to give in to Proxmire rather than see the legislation die, just as a previous radwaste bill had died in 1980 at the close of the 96th Congress. This broke the impasse, with the Senate agreeing by voice vote to the bill with the more liberal state veto provision. Final passage in the House was by a vote of 256 to 32.

Id.

104. Nuclear Waste Policy Act of 1982, 42 U.S.C. §§ 10,134(a)(3), 10,135(a)-(g) (1982).

and legislature of the state in which a site is to be located of his decision to recommend such site and the basis for such recommendation.[105] In addition, the Secretary is required to hold a public hearing in the vicinity of the nominated sites to inform the residents of the proposed site activities of the recommendation and to receive their comments.[106] Once this is completed, the Secretary sends his recommendation of the sites to the President, accompanied by an environmental assessment that incorporates the comments received at the public hearing.[107]

The second opportunity the states have to participate occurs no later than 60 days after the President approves a site for characterization activities.[108] At that point, the Secretary seeks to enter into a written agreement with the affected state setting forth the procedures under which consultation and cooperation between the parties will be carried out.[109] The written agreement shall specify the procedure that will be used for resolving objections of an affected state at any stage of the planning, siting, development, construction, operation or closure of such facility through negotiation, arbitration or other appropriate mechanisms.

The third opportunity the states have to participate occurs before site characterization begins when the Secretary is required to submit to affected states a general plan containing a description of the site characterization activities, the possible form of packaging of high-level waste and spent fuel and the conceptual repository design.[110] After receiving the general plan, the governor of the state can comment to the Secretary regarding his concerns of the impact of the activities on public health and safety and on the environment.[111]

Finally, at any time during characterization activity the governor of an affected state can request that the Secretary provide him with timely and complete information regarding determinations or plans made with respect to the activities of a site.[112] If the Secretary fails to respond to the request he is required to immediately suspend all activities at the site.[113]

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105. *Id.* § 10,132(b)(1)(H).
106. *Id.* § 10,132(b)(2).
107. *Id.* § 10,132(b)(1)(E), 10,132(b)(2).
108. *Id.* § 10,137(c).
109. *Id.*
110. *Id.* § 10,133(b)(1)(A)-(C).
111. *Id.* § 10,133(b)(1)(A).
112. *Id.* § 10,137(a).
113. *Id.* § 10,137(a)(2).

D. *Implicit Power of the State Veto*

The Secretary of Energy is required to evaluate the comments submitted by the governor of an affected state and to act upon them to the maximum extent feasible.[114] The Secretary also decides the parameters of the "maximum extent feasible," thus determining the extent of the state's ability to participate in the decision to build a repository. The Secretary, therefore, can either ignore the concerns of the state upon his determination that correcting the problem is infeasible, or listen to the concerns of the state, making its opportunity for participation meaningful.

Unfortunately, the Secretary is required to meet the strict time schedule of the Waste Act.[115] If he addresses all of a state's concerns, compliance would be impossible. Additionally, the Secretary is under pressure from powerful interest groups and political sources to build a repository expediently. A statement by President Reagan illustrates this point:

> I am instructing the Secretary of Energy, working closely with industry and state governments, to proceed swiftly toward development of the means of storing and disposing of commercial high-level waste. We must take steps now to accomplish this objective and demonstrate to the public that problems associated with management of nuclear waste can be resolved.[116]

It is pressure such as this that will cause the Secretary to favor ignoring a state's complaints concerning environmental and consumer protection. However, a state has the power to force the Secretary to consider its complaints by threatening to veto the Secretary's decision to build a repository. The Secretary will be forced to choose between the delays that arise from considering a state's complaints and the delays associated with the procedure necessary to override a state veto.[117] Because the latter will probably be more time consuming, the threat of a veto will force the Secretary to carefully consider the concerns of the state.

If an affected state is still not satisfied with the Secretary's review of its complaints, the governor can exercise his veto option[118] within 60 days after the date the President recommends to Congress the suitabil-

114. *Id.* § 10,137(b).

115. *See* APPENDIX A.

116. OFFICE OF NUCLEAR WASTE ISOLATION, U.S. DEP'T OF ENERGY, U.S. DEPARTMENT OF ENERGY BRIEFING ON FIELD TESTING A-3 (1982).

117. *See supra* note 104 and accompanying text.

118. Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10,136(b)(1) (1982).

ity of a site for the location of a nuclear waste repository.[119] The veto takes the form of a notice of disapproval and must be accompanied by a statement of the reasons why the state disapproves the recommendation of the repository site involved.[120] This veto gives the state only limited power since it may be overridden by a joint resolution of Congress.[121]

If Congress overrides the veto, the state has a last chance to attack the plans for a repository during the NRC's licensing process.[122] Chances are that at this stage, after all the studies have been completed and approved, the NRC will grant a license for the construction of a repository. However, the NRC is an agency of experts and might scrutinize the DOE's plans more thoroughly than Congress did when it considered overriding the state veto.

E. *State Power After the Approval of a Site*

Construction of a nuclear waste repository can begin only after the following events occur. First, the affected state refrains from exercising its veto option or it exercises its option but is overridden by a joint resolution of Congress. Second, the NRC grants a construction and operation license.[123] Once construction of the repository begins, a state's power is limited to one of minor supervision. For instance, a state still has the power to receive timely and complete information regarding the construction and operation of the repository.[124] However, without the threat of a veto the Secretary has no incentive to listen to a state's complaints. Nevertheless, the written agreement between the state and the Secretary is still binding and could provide some power to a state to prevent the Secretary from drastically deviating from the proposed plans.

V. AN EXAMPLE: THE HANFORD SITE

Investigations have been underway at four different types of geological formations in six states: the old basalt lava flows of the Columbia Plateau at DOE's Hanford facility in Washington, the welded tuff

119. *Id.* § 10,136(b)(2).
120. *Id.*
121. *Id.* § 10,135(c).
122. Disposal of High Level Radioactive Wastes in Geologic Repositories, 10 C.F.R. §§ 60.61-.65 (1983).
123. Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10,134(d) (1982).
124. *Id.* § 10,137(a)(2).

(another type of volcanic rock) at the Nevada site,[125] bedded salt in the Paradox Basin of southeastern Utah and the Palo Duro Basin in the west Texas panhandle, and the salt domes in the Louisiana and Mississippi region.[126] The Basalt Waste Isolation Project at the Hanford site is presently the primary concern of the DOE since the site has been a government testing ground for nuclear energy for many years.

A. *Facts About the Hanford Site*

The Hanford site is located in the south central portion of the state of Washington and is grounded on thick basaltic formations covering 570 square miles of the Pasco Basin within the Columbia plateau. Basalt is a dark, dense, fine grained volcanic rock that flowed in sheet-like lava flows between 12 and 16 million years ago.[127] Much is known about this area since it is an existing government-owned site dedicated to nuclear activities since 1943.

B. *Procedural Errors by the Department of Energy*

Before the passage of the Nuclear Waste Policy Act, the NRC announced rules that were to be followed when disposing of nuclear waste.[128] Pursuant to these rules the DOE set up general guidelines that were to be followed in selecting a site suitable for the construction of a nuclear waste repository. In accordance with these guidelines the DOE performed geological studies at the Hanford site and submitted its findings in the form of an environmental assessment to the NRC. Once the Nuclear Waste Policy Act was passed, all activity at the Hanford site was stopped until the procedures of the new act were followed. The DOE promptly submitted its guidelines promulgated under the NRC rules to satisfy requirements under the Nuclear Waste Policy Act.[129] The submitted guidelines, however, were grossly inadequate since they failed to specify factors which qualify or disqualify a site from development as a repository as required by section 112(a) of the Nuclear Waste Policy Act.[130] Therefore, the Secretary of Energy was

125. Carter, *supra* note 103 at 35.
126. *Id.*
127. U.S. DEP'T OF ENERGY, BASALT WASTE ISOLATION PROJECT FACTS 1.
128. Disposal of High Level Radioactive Wastes in Geologic Repositories, 10 C.F.R. §§ 60.1-.73 (1983).
129. Proposed Guidelines for Recommendations of Sites for Nuclear Waste Repositories, 10 C.F.R. § 960 (1983).
130. ENVIRONMENTAL POLICY INST., COMMENTS OF THE ENVIRONMENTAL POLICY INSTITUTE IN THE MATTER OF: DEPARTMENT OF ENERGY SOLICITATION OF COMMENTS CONCERNING THE

required to rewrite the guidelines, but as of January 1, 1984 had not yet done so.[131]

The Secretary also violated the procedures of the Nuclear Waste Policy Act when he submitted an environmental assessment completed in accordance with the NRC rules to satisfy the requirement of section 112(b) of the Nuclear Waste Policy Act. The submitted environmental assessment was virtually identical to a National Environmental Policy Act[132] (NEPA) environmental assessment[133] which is in no way similar to that required under the Nuclear Waste Policy Act.[134] In fact, the environmental assessment required by the Nuclear Waste Policy Act is

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PROPOSAL TO NOMINATE THE BASALT WASTE ISOLATION PROJECT SITE AT HANFORD, WASHINGTON UNDER THE NUCLEAR WASTE POLICY ACT OF 1982 § 1.1 (1983) [hereinafter cited as EPI COMMENTS]. The EPI commented:

> The proposed guidelines do not constitute an adequate basis for determining suitability for site characterization. Similarly, DOE has failed to define, in the proposed guidelines, which factors require characterization and which do not. The proposed guidelines also fail to adequately describe "qualifying" and "disqualifying" factors which may, or may not, require site characterization.

Id.

131. On January 11, 1983, the Commission started proceedings to determine if the new DOE guidelines satisfied the requirements of § 112(a) of the Waste Act.

132. 42 U.S.C. §§ 4321-4347 (1982).

133. An environmental assessment is prepared when an agency is uncertain whether to prepare an environmental impact statement (EIS) as required by § 102(c) of the NEPA. Each agency is free to develop its own standards and procedures for the assessment process. The assessment can serve as an early decision document that identifies environmental impacts, examines alternatives, and specifies ways to mitigate adverse environmental effects. The assessment process results in either a decision to prepare a formal EIS or a negative declaration, a decision that no EIS is required. T.J. SCHOENBAUM, ENVIRONMENTAL POLICY LAW 114 (1982).

134. 42 U.S.C. § 10,132(b)(1)(E) (1982).

> Each nomination of a site under this subsection shall be accompanied by an environmental assessment, which shall include a detailed statement of the basis for such recommendation and of the probable impacts of the site characterization activities planned for such site, and a discussion of alternative activities relating to site characterization that may be undertaken to avoid such impacts. Such environmental assessment shall include—
>
> (i) an evaluation by the Secretary as to whether such site is suitable for site characterization under the guidelines established under subsection (a) of this section;
>
> (ii) an evaluation by the Secretary as to whether such site is suitable for development as a repository under each such guideline that does not require site characterization as a prerequisite for application of such guideline;
>
> (iii) an evaluation by the Secretary of the effects of the site characterization activities at such site on the public health and safety and the environment;
>
> (iv) a reasonable comparative evaluation by the Secretary of such site with other sites and locations that have been considered;
>
> (v) a description of the decision process by which such site was recommended; and
>
> (vi) an assessment of the regional and local impacts of locating the proposed repository at such site.

Id.

more like an environmental impact statement required by NEPA.[135] Unlike an environmental assessment required by NEPA, an environmental assessment required by the Nuclear Waste Policy Act is a final agency action subject to full judicial review.[136]

Finally, the DOE's decision to nominate the Hanford site for characterization activities was not in accordance with the procedure set out in section 112(a) of the Nuclear Waste Policy Act. This section requires that site selection guidelines give primary consideration to geological factors. However, the DOE's environmental assessment of the Hanford site states that the site was selected because it is a federally owned tract of land in Washington that is presently committed to nuclear activites and may contain host rocks at appropriate depths for a repository.[137] In their proposed environmental assessment, the DOE failed to explain why the selection of a site on federally owned land is

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135. 42 U.S.C. § 4332(2)(C) (1982).

> [A]ll agencies of the Federal Government shall—
>
> . . .
>
> (C) include in every recommendation or report on proposals for legislation and other major Federal 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.

Id.

136. Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10,132(b)(1)(F)(i) (1982).

137. U.S. DEP'T OF ENERGY, DRAFT ENVIRONMENTAL ASSESSMENT FOR CHARACTERIZATION OF THE HANFORD SITE PURSUANT TO THE NUCLEAR WASTE POLICY ACT OF 1982 (PUBLIC LAW 97-425) §§ 2.2, 2.3 (1983) [hereinafter cited as DRAFT ASSESSMENT]. The DOE's National Waste Terminal Storage (NWTS) Program follows a formal three-step siting process that begins with national screening and culminates in detailed site characterization of candidate sites for a nuclear waste repository. The first phase of the siting process is site screening, designed to find sites favorable for waste isolation. The DOE cites three approaches that it uses to identify starting points for screening studies. The first is the "host rock approach," by which the DOE identifies regions containing potentially suitable host rock types. A second approach is the DOE's initiation of siting studies at federally owned land tracts in Nevada and Washington (known as the Nevada Test Site and the Hanford Site), which have been committed to nuclear activities and which may contain suitable host rocks at appropriate depths for a repository. The third approach, called province screening, is based on the scrutiny of successively smaller subdivisions of broad provinces where geohydrologic conditions include multiple natural barriers to radionuclide migration.

The DOE stated that although province screening and other approaches may identify additional candidate sites, the locations currently under study (including the Hanford site) were identified using the host rock and land use approaches. Specifically mentioned was the fact that "[i]n the DOE-NWTS Program national site screening plan, early consideration was given to the Hanford Site in Washington State because of its prior long-standing use and commitment to nuclear activities and existing Government ownership." *Id.*

consistent with the Nuclear Waste Policy Act or would lead to the selection of the best possible site for the location of a repository.

The Hanford site should not be considered a suitable site for characterization activities until the Secretary adheres to the procedures required by the Nuclear Waste Policy Act.

C. *Geological Findings by the Department of Energy*

The environmental assessment required by the Nuclear Waste Policy Act is a comprehensive report specifically detailing the findings of the DOE at an examined site. As stated previously, the environmental assessment submitted by the DOE was not as extensive as that required by the Waste Act. In addition, the validity of the conclusions cited in the environmental assessment is questionable. For example, the DOE's environmental assessment states that estimated groundwater travel time[138] at the Hanford site is in excess of 13,000 years and, therefore, is in compliance with the NRC's proposed 1000 year minimum.[139] However, the NRC found this conclusion to be unfounded because the groundwater travel time varied considerably based on available data.[140] For that reason, the staff concluded that the DOE's groundwater travel time calculations cannot be given a significant degree of confidence.[141]

Another area in dispute is the DOE's conclusion pertaining to seismic activity of the Hanford site. The DOE concluded that the Hanford site is located in an area of historically low seismic activity and that the largest seismic event to occur in the area was the 1936 Milton Freewater earthquake that was caused by the Milton Freewater Structure.[142] The NRC disagrees with this finding and concludes that the

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138. Groundwater travel time is the time needed for groundwater to travel from the repository site to the accessible environment.

139. DRAFT ASSESSMENT, *supra* note 137, at § 2.4.2 (1983).

140. OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS, U.S. NUCLEAR REGULATORY COMM'N, DRAFT SITE CHARACTERIZATION ANALYSIS OF THE SITE CHARACTERIZATION REPORT FOR THE BASALT WASTE ISOLATION PROJECT § 3.3.2 (1983) [hereinafter cited as NRC DRAFT ANALYSIS]. The NRC stated:

> Sensitivity studies by the NRC staff show that calculations of pre-emplacement groundwater travel time can vary by several order of magnitude (from 20 years to greater than 1 million years), based on currently available hydrologic data . . . . The large range of possible travel times is the result of uncertainties in the hydrogeologic characterization of the Hanford site [including uncertainties] about the conceptual model, key hydraulic parameters, the nature of hydrogeologic boundaries, the validity of DOE's use of hydrochemistry, and the results of DOE's preliminary numerical modeling . . . .

Id.

141. *Id.*

142. DRAFT ASSESSMENT, *supra* note 137, at § 2.5.3.

Rattlesnake Wallula Formation near the Hanford site was the structure responsible for the event.[143] Moreover, the ERDA (the predecessor to the DOE) stated that the Hanford site is situated in a "seismic zone 2" as designated by the U.S. Coast and Geodetric Survey, implying the potential for modest damage from earthquakes.[144] Since seismic activity could be extremely dangerous to a nuclear waste repository and since agencies such as the NRC, ERDA and the DOE cannot agree on the cause of a seismic event which has occurred in the past 47 years, it would seem practical to stop considering the Hanford site to be suitable for a nuclear waste repository until these discrepancies can be cleared up.

Finally, the DOE's finding that the operation of the Hanford repository will not affect other nuclear activities carried out near the Hanford site is not justified. For instance, adjacent to the Hanford site are chemical reprocessing facilities containing large and concentrated quantities of nuclear material, including potentially dangerous quantities of plutonium. The site is also adjacent to a nuclear reactor facility, a fast flux testing facility and two Washington public power supply system commercial nuclear power plants (now under construction).[145] Although the probability of a major accident at these facilities may be small, the consequences of a severe release of radioactive elements could greatly affect the repository activities which are expected to extend over 80 years.[146] Nevertheless, the DOE concluded that the repository will not adversely affect the other nuclear activities carried out at the Hanford site. It did not, however, mention the effects the other nuclear activities might have on the construction or operation of the repository.[147] Furthermore, the environmental assessment is silent about the fact that 450,000 gallons of high-level radioactive waste leaked from tanks in the area adjacent to the proposed repository site.[148] These waste leaks have contaminated both the unsaturated and saturated zones in the central part of the Hanford region and could be released into the environment if the repository were built.[149] As a result, the Hanford site should not be considered a suitable site for char-

143. NRC DRAFT ANALYSIS, *supra* note 140, at § 4.3.3.

144. ERDA, ALTERNATIVES FOR LONG-TERM MANAGEMENT OF DEFENSE HIGH-LEVEL RADIOACTIVE WASTE: HANFORD RESERVATION § 3.1 (1977).

145. EPI COMMENTS, *supra* note 130, at 23.

146. *Id.*

147. DRAFT ASSESSMENT, *supra* note 137, at § 3.1.3.5.5.4.

148. EPI COMMENTS, *supra* note 130, at 24.

149. *Id.* at 25.

acterization activities until the DOE upgrades its research for the purposes of resolving the above discrepancies.

VI. CONCLUSION

The Nuclear Waste Policy Act gives the Department of Energy responsibility for the development and construction of nuclear waste repositories. The drafters of the Act believed that by incorporating time requirements within the Act, the DOE would perform responsibly and quickly in resolving the waste problem. Unfortunately, this has not occurred. The first requirement of Nuclear Waste Policy Act was that the Secretary of Energy issue guidelines by July 7, 1983. As of January 1, 1984 the Secretary had failed to issue adequate guidelines, leading to a six-month delay in the process to build the first repository. The DOE's failure to consider safety as the primary factor when storing nuclear waste will lead to state intervention and, as a result, to additional delays.

W. Kenneth Davis's (Deputy Secretary of the DOE) statement concerning the disposal of nuclear waste demonstrates this policy of slighting the safety factor:

> We do not need a perfect solution, only an adequate one . . . . [W]e must stop studying and begin now to build a test and evaluation facility, leading to a licensed repository . . . . [L]et us move swiftly to demonstrate that America's technical and scientific genius can dispose of high-level waste in several geologies.[150]

The attitude reflected in this statement is evidence that those with the ultimate responsibility to store nuclear waste have been basing their decisions on factors which enhance the image of our country, rather than factors which enhance the safety of its people and environment. The existence of this attitude, coupled with the DOE's inadequate research, emphasizes the importance of the state role under the Nuclear Waste Policy Act in evaluating and participating in the decision to construct a nuclear waste repository.

Robert A. Klausner

150. OFFICE OF NUCLEAR WASTE ISOLATION, U.S. DEP'T OF ENERGY, U.S. DEPARTMENT OF ENERGY BRIEFING ON FIELD TESTING A-3 (1982).

APPENDIX A

A SCHEDULE FOR FEDERAL AND STATE DECISIONS AND ACTIONS PURSUANT TO REPOSITORY DEVELOPMENT

Chronology	Section of Nuclear Waste Policy Act	
No later than 180 days after the date of enactment of this Act (January 7, 1983).	112(a)	Secretary of Energy (Secretary) shall issue guidelines for recommendation of sites proposed to be studied in depth for possible licensing as repositories.
No later than 180 days after the date of enactment of this Act (January 7, 1983).	116(a)	Secretary shall notify the Governor, the State legislature, and the tribal council of any affected Indian tribe in any state of the potentially acceptable sites within such state.
Before nominating a site to the President that the Secretary determines suitable for site characterization for the selection of the first repository site.	112(b)(1)(H) 112(b)(2)	Secretary shall notify the Governor, the State legislature, and the governing body of any affected Indian tribe of such nomination and the basis for such nomination. The Secretary shall also hold a public hearing in the vicinity of such site.
At any time after the Secretary's notification.	117(a)(2)	Upon written request for information by the Governor or legislature of any affected state or by an affected Indian tribe regarding determinations or plans made with respect to the chosen repository site, the Secretary will provide a written response within 30 days.
No later than January 1, 1985.	12(b)(1)(B)	Secretary shall recommend to the President 3 sites for characterization as candidate sites.

No later than 60 days after the Secretary's candidate site recommendations.	112(c)(1)	President approves or disapproves sites for study and notifies the affected states and Indian tribes of his decision.
No later than 60 days after the approval of a site for site characterization or a written request for information.	117(c)	Secretary shall seek to enter into a binding written agreement with the affected state and affected Indian tribe.
Before site characterization activities begin.	13(b)(1)	Secretary shall submit for such candidate site to the Commission, the Governor of the state or the affected Indian tribe a general plan for site characterization activities.
During site characterization activities.	113(b)(3)	Secretary shall report not less than once every 6 months to the Commission, the Governor of the affected state and the affected Indian tribe on the nature and extent of such activities.
Before the Secretary recommends to the President a site which has been determined suitable for a repository.	114(a)(1)	Secretary shall hold public hearings in the vicinity of each site. The Secretary shall also notify the Governor of the affected state and the affected Indian tribe of his decision to recommend the site to the President.
No sooner than 30 days after notification to the state or Indian tribe.	114(a)(1)	Secretary shall submit to the President a recommendation that the President approve such site for the development of a repository.
No later than March 31, 1987.	114(a)(2)(A)	President shall submit to the Congress a recommendation of one site qualified for application for a construction authorization for a repository.

If Congress approves the site.	115(b) 115(c) 116(b) 116(2) 118(a)	The designation of a site suitable for application for a construction authorization for a repository is effective if a notice of disapproval is not submitted to Congress by an affected state or Indian tribe or if Congress acts to override a State or tribal disapproval.
If a state or Indian tribe submits to Congress a petition for disapproval.	115(c) 118(a)	Congress has 90 calendar days of continuous session of Congress to override a notice of disapproval. State and affected Indian tribe have 60 days after the date the President recommends such site to submit a notice of disapproval.
If Congress does not override a state or Indian tribe notice of disapproval.	114(a)(3)	President shall submit to Congress a recommendation for another site within one year.
When a site designation has become effective (i.e., has not been disapproved).	114(b)	Within 90 days the Secretary shall submit to the NRC an application for a construction authorization for a repository at such site.
No later than January 1, 1989, or the expiration of 3 years after the submission of the construction authorization application (whichever is later).	114(d)	NRC shall approve or disapprove a repository site construction authorization.
No later than July 1, 1989.	112(b)(1)(C)	Secretary shall nominate 5 additional sites.
No later than March 31, 1990.	114(a)(2)(A)	President shall submit to Congress a second site which he determines is qualified for a construction authorization for a second repository.
No later than January 1, 1992.	114(d)(1)	NRC shall approve or disapprove a second repository construction authorization.

Around 1995.	Operation of the first national high level nuclear waste repository.