REPORT OF THE GOVERNOR'S TASK FORCE ON LOW-LEVEL RADIOACTIVE WASTE

JUNE, 1982

Pursuant to Executive Order #81-10

DRAFT REPORT

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GOVERNOR'S TASK FORCE ON LOW-LEVEL RADIOACTIVE WASTE

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summary

EXECUTIVE SUMMARY

In December, 1980, Congress enacted the Federal Low-Level Radioactive Waste Policy Act. The Act stipulates that each state is responsible for ensuring that adequate disposal facilities are provided for the disposal of low-level radioactive waste generated within a states borders. In September, 1981, Governor Albert Quie appointed a Governor's Task Force on Low-Level Radioactive Waste to review the options available to Minnesota for meeting the state's responsibilities under the Act.

The Task Force has identified two basic options the state can pursue to address its low-level radioactive waste disposal needs. These are:

1. Minnesota can develop a low-level radioactive waste disposal site within the state for the exclusive use of Minnesota waste generators.

2. Minnesota can join an interstate compact with neighboring states and seek to develop a regional disposal site within the compact boundaries. The regional disposal site would be fore the exclusive use of waste generators located with states that are members of the compact.

In examining these options, the Task Force noted that the development of a disposal site for the exclusive use of Minnesota waste generators contains several economic and legal uncertainties. The Task Force further noted that low-level radioactive waste can be most safely, economically and efficiently managed on a regional basis. As such, Minnesota should continue to pursue the joint development and adoption of a low-level radioactive waste compact with neighboring states.

Minnesota is an eligible party state in two low-level radioactive waste compacts. These compact groups are the Central States Compact and the Midwest States Compact. Eligibility to join either of the compacts expires in 1984. (Central States expiration date is January 1, 1984; Midwest States expiration date is July 1, 1984). To enact legislation adopting one of the compacts will require legislative approval during the 1983 Legislative Session. The purpose of the Governor's Low-Level Radioactive Waste Task Force Report is to provide the state's policymakers with the background information and preliminary assessment of compact conditions that will be necessary for the conditions that will be necessary for the state to address its low-level radioactive waste disposal needs.

The summary table in Chapter Four of this report provides a synopsis of the various compact provisions and their implications for Minnesota. In many respects the Central States and Midwest States Compacts are similar. The basic difference between the two compacts is in the manner a state will be selected to host a regional disposal facility.

In the Central States Compact the selection of a host state is initiated when a qualified prospective site operator submits a siting proposal to the Central States Commission for consideration. The Commission will not propose a site by itself but rather will review proposals submitted

from site operators. The Commission's review will be based upon the following criteria:

1. The capability of the applicant to obtain a license.

2. The economic efficiency of the proposed facility.

3. Financial assurances.

4. Accessibility to all party states.

5. Other criteria that the Commission may deem necessary.

The state in which a siting proposal is selected becomes the region's host state.

In the Midwest States Compact, the selection of a host state will focus on a Regional Management Plan. The Management Plan will be prepared and adopted by the Midwest States Commission. The Plan will identify the number and type of disposal facilities needed for the compact region. The Plan will also identify which states should serve as host states for the region. The criteria to be used by the Commission in selecting a potential host state include:

1. The health, safety and welfare of the citizens of the party states.

2. The existence of regional facilities within each party state.

3. The minimization of waste transportation.

4. The volumes and types of wastes generated within each party state.

5. The environmental, economic, and ecological impact on the air, land and water.

In both compacts a selected host state will have an important role in the actual location and siting of the disposal facility. If a host state is an "Agreement State" with the Nuclear Regulatory Commission (NRC), then the state would issue the site operating license. If a host state is a "Non-Agreement State" then the NRC will issue the license.

Although the language and conditions of the two proposed compact documents are important, consideration should also be given to current activities, events and characteristics of the compact groups. The following are some important differences between the compact groups.

1. Volume of waste and number of potential member states. The Midwest States Compact has a relatively large volume of waste generated within the region. The Midwest's volume (716,300 cu. ft.) is over five times the volume level of the Central States Compact (132,400 cu. ft.). The Midwest group contains two of the nation's top 10 waste producers (Illinois and Virginia). The Central States Compact has no dominate state generator although Minnesota is presently the largest volume producer in the proposed compact. The Midwest States Compact lists sixteen eligible party states whereas the Central States compact lists nine.

2. Site proposals. Only the Central States Compact has a formal proposal for a disposal site. A private site operator in Kansas has submitted an application to the state for the development and operation of a low-level radioactive waste site. The facility proposes to use abandoned salt mines near Lyons, Kansas for disposal. The Kansas Legislature will not act upon the application until a regional compact is formed.

3. Legislative activities within the compact groups. In the Central States group, progress is being made by individual states to adopt the Central States Compact. The State of Kansas has enacted legislation adopting the compact language and the Nebraska Legislature has passed a resolution supporting the compact with the intent of adopting the compact language during the state's 1983 legislative session. Missouri and Iowa introduced both the Central States and Midwest Compacts during their 1982 legislative session but no formal action was taken. In Louisiana, the 1982 legislative session began in April. The Central States Compact has been introduced and is expected to pass out of the states committees shortly.

In the Midwest States group no state has adopted the Midwest Compact. Two eligible states (Kansas and Virginia) have adopted compacts for different compact groups (Central States and Mid-Atlantic groups). One state, Nebraska, has passed a resolution supporting another compact. Two states (Maryland and Delaware) have recently petitioned the Northeastern States Compact for eligibility, and one state (Illinois) has indicated a renewed interest in evaluating the feasibility of the state developing its own site for exclusive use by state generators. The eligible party states in the Midwest group, have been seeking preliminary legislative review via special study committees but no formal state action is anticipated among the eligible party states until the 1983 legislative sessions.

The Governor's Task Force on Low-Level Radioactive Waste is sensitive to the various unknowns and continuing changes that are occurring in the two compact groups at this time. It is for these reasons that the Task Force feels it is premature to endorse one compact over the other at this time. As conditions change, the likelihood that one or both of the compacts will effectively demonstrate that a regional disposal site will be available by 1986 will improve. During the interim period it is suggested that an effort be made to educate and inform the Minnesota State Legislature of the low-level radioactive waste options and issues so that a meaningful discussion and review can be initiated in the 1983 legislative session.

chapter I

CHAPTER 1

INTRODUCTION

Since the advent of the nuclear age, the use of radioactive materials has become a relatively important part of our every day lives. Radioactive materials are used in the production of energy, scientific research, manufacture of consumer goods, medicine, agricultural research and industrial operations. One consequence of the use of radioactive material is the generation of radioactive waste products that have no further utility. These radioactive by-products are differentiated by the intensity of their radiation. This report focuses on those wastes defined by the 1980 Low-Level Radioactive Waste Policy Act as low-level radioactive waste.

1.1 DEFINITION OF LOW-LEVEL RADIOACTIVE WASTE

Low-level radioactive waste is defined primarily by what it is not. It is not: spent nuclear reactor fuel; wastes from reprocessing reactor fuel; uranium mining or mill tailings; or any other wastes that emit high levels of radioactivity. In general, low-level radioactive wastes are generated whenever radioactive materials are used. The radioactivity of low-level wastes is generally low enough so that no cooling and minimal shielding is required. The radioactive half-life of most of the radionuclides associated with low-level wastes are measured in weeks or years; however, some low-level wastes may have half-lives as long as five thousand years. As a general rule, it takes five to ten half-lives for a radioactive element to decay to levels that are considered nonhazardous. Cobalt-60 is one of the most common radioactive elements in low-level waste. Its half-life is 5.2 years so that storage or disposal for 25-50 years is necessary to render the material radiologically harmless. Carbon 14 with a half-life of 5,730 years, is one of the longest lived elements found in low-level wastes. As such, it would take 29,000 years to effectively eliminate its radioactivity.

Low-level wastes come in a variety of forms including:

1. General trash such as contaminated paper, plastics, fillers, metal and glass containers, protective clothing and insulation materials.

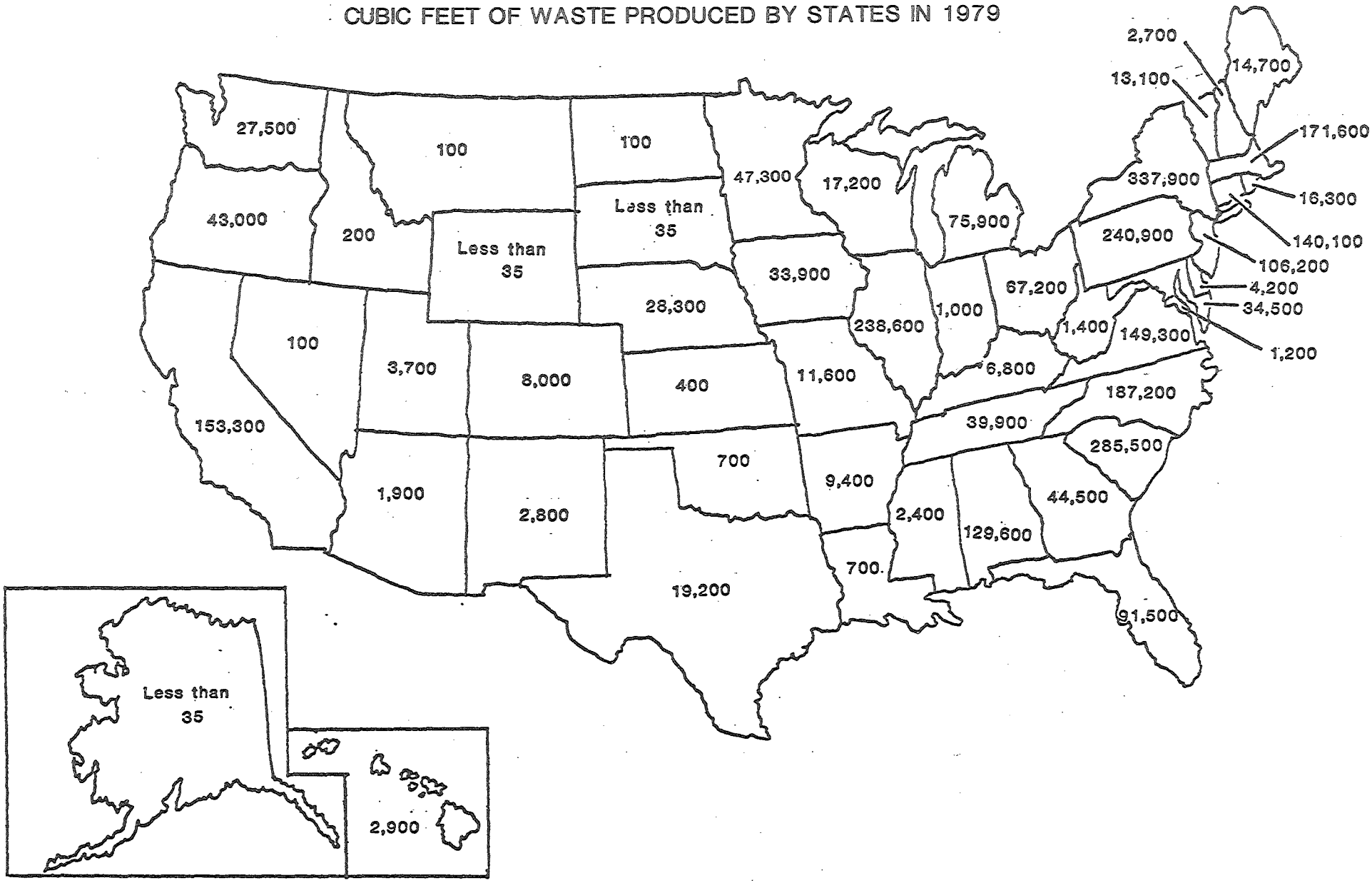
2. Discarded contaminated equipment such as machinery, pipes, valves, tools, etc.

3. Wet wastes such as contaminated laundry or clean-up water, filtering aids, sludges and cooling water.

4. Organic liquids such as lubricating oils, greases, and various materials used in bio-medical research.

Figure 1.1

CUBIC FEET OF WASTE PRODUCED BY STATES IN 1979



Source: A Legislator's Guide to Low-Level Radioactive Waste. National Conference of State Legislator's, 1981

Figure 1.2

Waste Volume Produced by States, 1979
(Rounded to nearest hundred cubic feet)

	Reactor Wastes (%)	Institutional & Industrial (%)	Govt. (%)	Cubic Feet	National Total (%)
*Alabama	***g.t. 99	**l.t. 1	0	129,600	5
Alaska	0	100	0	l.t. 35	l.t. 1
Arizona	0	100	0	1,900	l.t. 1
Arkansas	g.t. 99	l.t. 1	0	9,400	l.t. 1
*California	64	30	6	153,300	5
Colorado	0	100	0	8,000	l.t. 1
*Connecticut	92	5	3	140,100	5
Delaware	0	100	0	4,200	l.t. 1
District of Columbia	0	100	0	1,200	l.t. 1
Florida	86	14	0	91,500	3
Georgia	78	22	0	44,500	2
Hawaii	69	31	0	2,900	l.t. 1
Idaho	0	100	0	200	l.t. 1
*Illinois	36	47	17	238,600	8
Indiana	0	100	0	1,000	l.t. 1
Iowa	83	4	13	33,900	1
Kansas	0	100	0	400	l.t. 1
Kentucky	0	100	0	6,800	l.t. 1
Louisiana	0	100	0	700	l.t. 1
Maine	88	12	0	14,700	l.t. 1
Maryland	44	56	0	34,500	1
*Massachusetts	67	33	0	171,600	6
Michigan	75	25	0	75,900	3
Minnesota	37	63	0	47,336	2
Mississippi	0	59	49	2,400	l.t. 1
Missouri	0	100	0	11,600	l.t. 1
Montana	0	100	0	100	l.t. 1
Nebraska	g.t. 99	l.t. 1	0	28,300	1
Nevada	0	100	0	100	l.t. 1
New Hampshire	0	0	100	2,700	l.t. 1
New Jersey	60	40	0	106,200	4
New Mexico	0	26	74	2,800	l.t. 1
*New York	32	61	7	337,900	12
*N. Carolina	58	42	0	187,200	7
North Dakota	0	100	0	100	l.t. 1
Ohio	14	43	43	67,200	2
Oklahoma	0	100	0	700	l.t. 1
Oregon	52	48	0	43,000	2
*Pennsylvania	50	33	17	240,900	9
Rhode Island	0	100	0	16,300	l.t. 1
*S. Carolina	30	69	1	285,500	10
South Dakota	0	100	0	l.t. 35	l.t. 1
Tennessee	0	100	0	39,900	1
Texas	0	100	0	19,200	l.t. 1
Utah	0	100	0	3,700	l.t. 1
Vermont	73	27	0	13,100	l.t. 1
*Virginia	72	25	3	149,300	5
Washington	0	89	11	27,500	1
W. Virginia	0	100	0	1,400	l.t. 1
Wisconsin	91	9	0	17,200	l.t. 1
Wyoming	0	100	0	l.t. 35	l.t. 1
Total U.S.	50	41	9	2,821,000	100

*Top 10 producing states
**l.t. - Less than
***g.t. - Greater than

Source: National Conference of State Legislator's LLW Report. Minnesota statistics are from the Dept. of Health LLW Survey.

5. Biological wastes such as animal carcasses and tissues used in research.

1.2 DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE

Every state in the United States generates some low-level radioactive waste. Figures 1.1 and 1.2 indicate the general volume and source of those wastes. By the year 2000, the U.S. Department of Energy estimates that nearly 8 million cubic feet of low-level radioactive waste will be generated nationally. These wastes must be properly managed and disposed.

The predominate method used for the disposal of low-level radioactive waste has been shallow-land burial. The first commercial low-level radioactive waste disposal site opened in 1962 at Beatty, Nevada. By 1972, a total of six disposal sites were operating in the states of Nevada, Washington, Illinois, South Carolina, New York, and Kentucky (see Figures 1.3 and 1.4). All of these sites were shallow-land burial facilities developed and operated by private contractors on government owned lands. Between 1975-1979 problems developed at some of the existing disposal sites.

The West Valley, New York facility, was closed in 1975 after the burial trenches filled with rainwater and overflowed. The overflow was detected by on-site monitoring stations operated by the New York State Department of Environmental Conservation. The state ordered the excess rainwater pumped out of the trenches and treated. Nevertheless, ongoing state monitoring has detected some radioactive isotopes in an adjacent stream that crosses the site. As a result, the state has conducted a sampling program of the region's air, water, milk, fish, wildlife, crops and soils to determine the extent of radioactive contamination. The results of these studies show some evidence of Tritium (heavy water - H^3) migration; however, the concentrations of Tritium are relatively low and pose no apparent health hazard.[1]

The Maxey Flats, Kentucky site, was closed in 1977 following a controversy concerning the site's potential impact on the surrounding environment. As early as 1971, it was concluded by the Nuclear Regulatory Commission and the State of Kentucky, that special monitoring studies were needed to ensure that completed disposal trenches would not contaminate the regions groundwater. Because of a tight impermeable material underlying the site, rainfall has infiltrated the site and saturate the trenches. To remedy the problem, water has to be pumped out of the trenches and processed. This corrective action costs the State of Kentucky an estimated 2½ million dollars annually.

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[1] Systems Analysis of Shallow Burial, Technical Background Report, U.S. Nuclear Regulatory Commission, March 1981.

Figure 1.3

LOW LEVEL RADIOACTIVE WASTE DISPOSAL SITES

Figure 1.4

CUBIC FEET OF WASTE DISPOSED AT LOW LEVEL
RADIOACTIVE WASTE DISPOSAL SITES: 1971-1981

Year	Disposal Site						National Annual Total
	Maxey Flats	Beatty	Barnwell	Sheffield	West Valley	Hanford	
1971	429,819	126,569	41,354	156,445	224,674	20,624	1,035,000
1972	550,101	151,890	132,678	210,336	249,112	23,096	1,317,000
1973	355,692	143,944	559,354	301,025	263,520	36,480	1,661,000
1974	314,198	144,897	644,287	436,952	302,791	49,829	1,893,000
1975	604,204	174,562	638,213	498,507	66,710	52,973	2,035,000
1976	486,747	135,451	1,420,617	476,046	--a	101,248	2,621,000
1977	15,115	167,464	1,644,370	623,062	--	95,986	2,546,000
1978	--a	311,726	2,174,200	3,602	--	262,108	2,752,000
1979	--	229,230	2,240,490	--a	--	352,444	2,821,000
1980	--	449,630	1,932,610	--	--	876,660	3,259,000
1981 (estimated)	--	211,890	1,412,600	--	--	353,150	1,979,000

a. Suspended operations

Source: Minnesota State Briefing Book for Low-Level Radioactive Waste Management. U. S. Department of Energy, July 1981.

The Sheffield, Illinois site opened in 1967. The site operated for 11 years and closed in 1978 after it reached its licensed storage capacity. Soil characteristics of the area are such that accumulation of water in the filled trenches is generally prevented. In addition, soils have high ionic exchange rates that serve to inhibit the migration of most radioactive isotopes. The only migration detected by monitoring wells is some elevation of Tritium in a locally contained aquifer.

With the closure of West Valley, Maxey Flats, and Sheffield, only three commercial disposal sites are still operating in the United States (Hanford, Washington; Beatty, Nevada; and Barnwell, South Carolina). The U.S. Department of Energy estimates that with the national growth of radioactive wastes and the loss of the three regional disposal facilities, existing storage and disposal facilities could reach their capacity limits by 1990.[2]

1.3 LOW-LEVEL RADIOACTIVE WASTE DISPOSAL CRISIS

The need for additional low-level radioactive waste disposal facilities became acutely evident in 1979 when the Hanford and Beatty sites were temporarily closed. The Governors of Washington and Nevada closed these disposal facilities to protest infractions of packaging and transportation regulations. South Carolina (which had been receiving approximately 80% of the nation's low-level radioactive waste) supported the protest and announced that its Barnwell site would place a limit on the volume of waste it would accept.[3] The closures helped to direct national attention to the need for additional regional disposal facilities. With limited access to disposal sites, generators of low-level radioactive waste were faced with a storage crisis.

The low-level radioactive waste generators hardest hit by the temporary disposal site closures were hospitals, clinics, universities and industrial users. Most of these generators have limited storage space to accommodate any measurable volume of wastes on a long term basis. Fortunately, the transportation and packaging problems were resolved and the sites at Beatty and Hanford were reopened. This averted the short-term storage and disposal problem, however, the potential for serious long-term disposal shortages continues. The problem of future disposal needs will become more severe as existing host states (Washington, Nevada and South Carolina) continue to decrease their states' role as national low-level radioactive waste sites.[4]

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[2]U.S. Department of Energy, Low-Level Radioactive Waste Policy Act; Report to Congress, 1981.

[3]The limit imposed on the Barnwell site applied to out-of-state generators and has effectively reduced the amount of waste disposed of at the site by 50%. The limit still remains in effect.

[4]The State of Washington has passed a resolution banning out of state disposal of non-medical radioactive wastes. This resolution was overturned by the state Supreme Court. Nevada is looking for ways to accelerate the closure of the Beatty site.

1.4 FEDERAL LOW-LEVEL RADIOACTIVE WASTE POLICY ACT

In an effort to establish a national framework for the management of low-level radioactive wastes, Congress enacted the "Federal Low-Level Radioactive Waste Policy Act" in December, 1980. (See Appendix A for the text of the Act.) The Act includes the following major provisions:

1. Each state is responsible for insuring that sufficient disposal capacity is available for the low-level radioactive waste generated within the state. This disposal capacity can be provided either inside or outside of the state's political boundaries;

2. The states are urged to join interstate compacts with the intent of developing policies and facilities necessary to adequately address the problem of low-level radioactive waste disposal;

3. Congressional consent is necessary before interstate compacts can take effect;

4. After January 1, 1986, any region which has formed a low-level radioactive waste compact, may restrict the use of its regional disposal facilities to the disposal of wastes generated within the compact region.

1.4.1 Minnesota's Options Under the Act

With the passage of the Federal Low-Level Radioactive Waste Policy Act, Minnesota is faced with two general options. It can elect to: (a) develop a state facility for managing and disposing of radioactive wastes within the state; or (b) join an interstate compact with neighboring states for the purpose of establishing a regional disposal facility. If the state fails to assume its responsibilities as outlined in the Act, there will be no assurance that safe and adequate disposal facilities for the low-level radioactive waste produced in Minnesota will be available. Without access to proper disposal facilities, Minnesota's generators of low-level radioactive waste would be forced to cease those activities requiring the use of radioactive material.

Presently, Minnesota is a moderate producer of low-level radioactive waste. In 1980 it is estimated that the state generated approximately 64,680 cubic feet per year of low-level radioactive waste. Slightly more than half (52.1%) of the waste was generated by the state's two nuclear power plants. Together, these plants (Monticello and Prairie Island) supply approximately 35.4% of the state's electrical needs.[5]

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[5]Minnesota Energy Agency 1980 Biennial Report.

FIGURE 1.5
GOVERNOR'S TASK FORCE ON LOW-LEVEL
RADIOACTIVE WASTE

Chairman	
Lauren Larsen	Citizen member, Minnesota Environmental Quality Board
Elected Officals (State)	
Senator Duane Benson	Minnesota State Senate
Senator Gene Merriam	Minnesota State Senate
Representative William Dean	Minnesota House of Representatives
Representative Ken Nelson	Minnesota House of Representatives
Elected Officals (Local)	
Vernon "Bob" Haglund	Wabasha County Commissioner
Harold Trende	Carver County Commissioner
Environmental Interests	
John Herman	Attorney
Nelson French	Director, Project Environment
Low-level Radioactive Waste Generators	
Dr. Max DeLong	Electric utility generator (Northern States Power Company)
Dr. Richard Vetter	Hospital/Medical generator (Mayo Clinic)
Robert Wissink	Industrial generator (3M)
Institution of Higher Education	
Dr. Donald Barber	School of Public Health, University of Minnesota
Medical Profession	
Dr. John Marta	President, Minnesota State Radiological Society
Minnesota Geological Survey	
Dr. Matt Walton	Director, Minnesota Geological Survey
Ex-Officio Members	
Louis Breimhurst	Executive Director, Minnesota Pollution Control Agency
Dr. George Pettersen	Commissioner, Minnesota Department of Health

Barring major political or technological changes, it appears unlikely that a sudden shift from nuclear powered generators to alternative energy sources will occur in the near future. As such, limited access to disposal facilities could adversely effect approximately a third of the state's electrical energy supply. The electric utility industry is not the only segment of the state's economy that would be affected. Other low-level radioactive waste generators such as hospitals, biomedical research laboratories, colleges and universities, would be impacted as well. Without access to a low-level radioactive waste disposal facility, several types of medical treatment and diagnostic services would no longer be available in Minnesota. In addition, several industries in Minnesota that presently serve as sole national and international suppliers of unique high-technology products, would have to cease operation or transfer their manufacturing activities to another state.

1.5 GOVERNOR'S TASK FORCE ON LOW-LEVEL RADIOACTIVE WASTE

Minnesota's success in meeting its responsibilities as outlined in the Federal Act, depends upon its ability to develop a consensus on an appropriate direction for waste management and disposal. Toward this end, a Special Task Force was appointed by Governor Quie on September 11, 1981 to review disposal alternatives available to the state.[6] Figure 1.5 lists the members of the Task Force and the groups that they generally represent. In addition to the Task Force, the Governor designated Dr. George Pettersen, Commissioner of Health, as the state's chief low-level radioactive waste compact negotiator.

The following report has been prepared by the Task Force for the purpose of providing background information and review of the problems, options and implications for managing the disposal of low-level radioactive wastes generated in Minnesota. The report is divided into five major sections.

1. A review of low-level radioactive wastes generated in Minnesota. (Chapter 2)

2. A discussion of the general options available to Minnesota. (Chapter 3)

3. A detailed review of conditions and responsibilities described in Interstate Compacts for which Minnesota is an eligible party state. (Chapter 4)

4. Task Force Findings. (Chapter 5)

5. Appendix of key documents, data and support material.

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[6]The Task Force was established by Executive Order No. 81-10. (See Appendix)

chapter 2

CHAPTER 2

LOW-LEVEL RADIOACTIVE WASTE IN MINNESOTA

2.1 CHARACTERISTICS OF RADIOACTIVE MATERIAL

Low-level radioactive waste consists of a wide range of material with varying physical properties. One common characteristic of these wastes is that the nuclei of the waste atoms are "unstable". These nuclei are in a constant state of disintegration through the release of subatomic particles into the space outside the atom. The energy and type of particles emitted, the frequency of emissions, the length of time that a material remains radioactive, concentration of material, the stability of the material, and the volume of material produced are all important factors to consider in describing radioactive waste.

2.1.1 Volume of Waste Produced

Traditionally, low-level radioactive waste disposal needs have been based upon the volume of waste produced. The reason for this is that the Nuclear Regulatory Commission issues a disposal license for a specified location. The volumetric area that can be devoted to waste disposal is also defined in the permit. As such, the rate and amount of volume received by a disposal facility helps to define the licensed operating life of the site. The measurement of volume, therefore, is one way to assess existing demands on available disposal space as well as projected future expansion needs. Volume of waste measurements also provide a useful tool for comparing the relative magnitude of waste being produced in different states and by different categories of generators.

Based upon the 1981 Minnesota Department of Health Survey, Minnesota has shipped for disposal a yearly average of 53,717 cubic feet of low-level radioactive waste between 1977-1979. (See Figure 2.1.) On a national basis, this volume places Minnesota 15th among the largest producers of low-level radioactive waste. The survey also estimates that by 1990, the volume of waste shipped from Minnesota will increase by 74%.

2.1.2 Energy and Type of Particle Emitted

Not all sub-atomic particles leaving an atom are the same, nor do they all possess the same energy levels. In general, radiation associated with low-level wastes can be either alpha, beta or gamma radiation. Alpha radiation is the least penetrating type of radiation. It can be stopped by a sheet of paper and usually cannot penetrate human skin. Beta is a more penetrating type of radiation. Some beta particles can penetrate human skin and damage living cells. Depending upon the energy level of the beta particles, effective "screens" or barriers can be used to block the radiation. Gamma radiation has the greatest penetrability. It is the result of energy releases in the form of photons which are very energetic, have particularly short wave lengths, and very high frequencies. Safe shielding of high energy gamma emitting wastes requires rather dense material such as lead. Most low-level radioactive waste consists of beta emitting material although some gamma emitters may also be included.

Figure 2.1

CUBIC FEET OF WASTE SHIPPED 1977-1979

Type of Facility	1977	1978	1979
Medical	7,963 (12.8%)	8,877 (17.2%)	8,335 (17.6%)
Educational	5,259 (8.4%)	6,909 (13.4%)	10,009 (21.1%)
Industrial	6,071 (9.7%)	11,024 (21.4%)	11,606 (24.5%)
Commercial Power Reactor	43,113 (69.1%)	24,600 (47.8%)	17,386 (36.7%)
Governmental	0.00 (0.0%)	0.00 (0.0%)	0.00 (0.0%)
TOTAL	62,405 (100%)	51,410 (100%)	47,336 (100%)

AVERAGE SHIPPED VOLUME 1977-1979

Type of Facility	Volume
Medical	8,391 (15.6%)
Educational	7,392 (13.8%)
Industrial	9,567 (17.8%)
Commercial Power Reactor	28,367 (52.8%)
Governmental	0.000 (0.0%)
TOTAL	53,717.3 (100%)

The energy level of radiation is important because it helps determine: (1) the potential level of penetration by a particle; (2) shielding levels that may be required for protection; and (3) potential hazards to living cells. Many low energy beta emitters such as Carbon 14 may require little shielding for safety purposes. Plutonium 239, on the other hand, has very high energy alpha particles, and requires significant shielding. Figure 2.2 lists the various energy values for the most common low-level radioactive wastes produced in Minnesota.

2.1.3 Radioactive Half-Life

Radioactive elements decay at varying rates over periods of time ranging from 1,000's of years to fractions of seconds. The longevity of the radioactive element (the length of time the material remains radioactive) is measured in half-lives. A half-life is defined as the period of time required for half of any amount of an element to decay. For example, if an ounce of Phospherous 32 with a half-life of 14 days were sealed in a container, only half of it would be left if the container were opened in 14 days. The total volume of material would still remain approximately the same but half of the Phospherous 32 would have decayed to another form of nuclear material.

As a rule of thumb, a radioactive element must undergo ten half-lives before it loses its radioactivity. Most of the radioactive elements in low-level radioactive waste have relatively short half-lives (under ten years), however, some material, such as Carbon 14, have extremely long half-lives (5,730 years). While half-life measurements provide a valuable tool for determining the length of time a material will remain radioactive, it does not always reflect the radioactive hazard of an isotope. Carbon 14, for example, has a long half-life but because it emits only low energy beta particles, it poses a minor hazard. Figure 2.2 lists the half-life values for the most common low-level radioactive wastes in Minnesota.

2.1.4 Rate of Radioactive Decay

One final measure of radioactivity is the number of disintegrations or emissions occurring in a particular volume of waste product. A unit of measure used to define relative rates of radioactive is called a curie (Ci).[1] Curie measurements provide a useful but somewhat limited criteria for comparing radioisotopes. Total curie amounts are volume, concentration and time dependent; therefore, as these variables change, so do the curie values. In addition, curie measurements do not directly reflect the type of radiation being emitted (alpha, beta or gamma), the length of time that a material remains radioactive (half-life), or the energy levels of the radiation being emitted (MeV). Figure 2.2 lists the 1979 curies produced of the most common low-level radioactive wastes in Minnesota. Because it is difficult to control the variables affecting curie measurements, there are no estimates of total curie levels of waste that might be generated in Minnesota in the future.

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[1]One curie is equal to 3.7×10^{10} disintegrations per second.

Figure 2.2

CHARACTERISTICS OF MAJOR ELEMENTS IN
MINNESOTA'S LOW-LEVEL RADIOACTIVE WASTE

Typical Waste Elements[1]	Half-life	Decay Energy in MeV	Curries[2] Shipped in 1979
(H^3) Hydrogen^3 (Tritium)	12.26 yr.	0.019	16.389
(C^{14}) Carbon^{14}	5,730 yr.	0.156	0.720
(P^{32}) Phosphorus^{32}	14.3 da.	1.710	2.778
(S^{35}) Sulfur^{35}	88 da.	0.1674	0.341
(Cr^{51}) Chromium^{51}	27.8 da.	0.752	44.880
(Mn^{54}) Manganese^{54}	303 da.	1.379	876.600
(Co^{58}) Cobalt^{60}	71.3 da.	2.309	12.000
(Co^{60}) Cobalt^{60}	5.26 yr.	2.819	11,783.456
(Zn^{65}) Zinc^{65}	243.6 da.	1.353	65.001
(Sr^{90}) Strontium^{90}	28.1 yr.	0.546	66.000
(Mo^{99}) Molybdenum^{99}	67 hr.	1.37	232.000
(I^{125}) Iodine^{125}	60 da.	0.149	19.891
(I^{131}) Iodine^{131}	8 da.	0.970	30.846
(Xe^{133}) Xenon^{133}	5.3 da.	0.427	52.000
(Cs^{134}) Cesium^{134}	2.05 yr.	2.062	56.220
(Cs^{137}) Cesium^{137}	30.23 yr.	1.176	927.561
(Po^{210}) Polonium	138.4 da.	5.408 (this is alpha radiation)	410.000

(1) A complete listing of low-level radioactive waste elements generated is included in the Minnesota Health Department's Survey (See Appendix).

(2) Together, these elements accounted for 97% of the curies shipped in 1979.

In 1979, the nuclear power reactors produced the greatest curie level of waste (13,142 Ci). This accounted for approximately 88% of the total curies of radioactive materials shipped for disposal. (See Figure 2.3) Medically related radioactive wastes accounted for 317 Ci or approximately 2% of the total curies shipped. Most of the medical waste, (232 curies) are a result of using molybdenum 99 (Mo 99) which has a half-life of 66.69 hours and a maximum particle energy of approximately 1.19 MeV. In the reactor waste, less than .1% (12 curies) of Cobalt 58 (Co 58) is generated. Cobalt 58 has a half-life of 71.3 days and a maximum particle energy of approximately 1.3 MeV. Although a greater number of curies of Mo 99 are produced, the half-life and maximum energy level of emitted particles are lower than for Co 58. Using the rule that after ten half-lives an isotope is no longer radiologically hazardous, Mo 99 would be non-radioactive after a couple of months, whereas Co 58 would still be considered radioactive for about two years. Curies alone therefore do not always provide an accurate assessment of disposal needs.

2.2 MAJOR WASTE GENERATORS IN MINNESOTA

2.2.1 Nuclear Reactor Generated Wastes

Nuclear powered electrical generators are the largest producers of low-level radioactive wastes as measured by both volume and in curies. The estimated 1980 volume of wastes produced by the commercial reactors is 33,690 cu. feet.[2] This volume accounted for approximately 52% of the waste volume shipped out of the state for disposal in 1980. Minnesota has three commercial reactors operating at Monticello and Prairie Island. Together these reactors supply over one-third (approximately 35%) of the state's electrical power supply.[3] These facilities are in early stages of their operating life cycle and are expected to continue operating into the early 2000's. Approximately half of the low-level wastes produced in nuclear power plants are ionic resins used to purify the reactor's coolant system. These wastes are dewatered and solidified prior to shipment for disposal. Solidification of the liquids is required for disposal, and on the average, can increase the waste volume by 50%. Other types of reactor wastes include dry compactible wastes (such as paper, rags and clothing) and noncompactible wastes (such as contaminated tools, machinery and piping). Where possible, Minnesota's reactor operators utilize the volume reduction technique of compacting. Compaction levels are on the order of 2.5 to 1.

No new nuclear power generators have been proposed for Minnesota. Nevertheless, commercial power reactors will probably continue to be the single largest source of low-level radioactive waste generated in Minnesota through 1990. The continued growth of waste in other sectors of Minnesota's economy will likely reduce the electric utility's percentage of the state's total volume of low-level waste from 52% to 43% (see

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[2]Low-Level Radioactive Waste in Minnesota, Minnesota Department of Health, July, 1981.

[3]Minnesota Energy Agency, Biennial Report, 1980.

FIGURE 2.3

ESTIMATED CUBIC FEET OF WASTE SHIPPED

1980, 1985, 1990

Type of Facility	Estimated 1980	Estimated 1985	Estimated 1990
Medical	7,944 (12.3%)	4,626 (6.3%)	5,226 (5.6%)
Educational	7,009 (10.8%)	10,025 (13.8%)	14,031 (15.0%)
Industrial	16,012 (24.7%)	24,013 (32.9%)	34,204 (36.5%)
Commercial Power Reactor	33,704 (52.1%)	34,204 (46.9%)	40,104 (42.8%)
Governmental	37 (0.06%)	37 (0.05%)	37 (0.04%)
TOTAL	64,706 (100%)	72,905 (100%)	93,602 (100%)

SOURCE: Minnesota Department of Health Low-Level Radioactive Waste Survey, 1981

Figure 2.3). In terms of radioactivity levels, the electric utility industry accounts for nearly 90% of the total curie levels shipped for disposal. (See Figure 2.4.) Cobalt 60 and Manganese 54 are the most common radioisotopes produced. Figure 2.1 lists the half-life, energy levels and present curie levels produced in Minnesota for these isotopes.

2.2.2 Wastes From Industrial Activities

Many of Minnesota's industries are national leaders with regard to high technology uses of radioactive materials. In fact, several unique products manufactured in Minnesota are not readily available from any other manufacturing source in the nation. For example, Minnesota industry is the sole national supplier of Cesium 137 and Iodine 125 "implant seeds" used in cancer treatment. Iodine well logging used to test soil characteristics and aid in the exploration of oil is also a product only available nationally through Minnesota industry. Finally, Minnesota industry provides the only free-world static eliminators used in manufacturing processes and other activities where a static free environment is required to prevent accidental fire and/or explosion. Because of the unique properties of the various isotopes used, no effective alternative products or manufacturing processes are available. As such, if Minnesota's industry is to continue exporting many of its high technology products, some low-level radioactive waste will be generated.

Low-level radioactive wastes are also produced in the manufacture of radiopharmaceuticals, smoke detectors, luminous dials, calibration equipment, and other items that use radioactive material as sealed sources in instruments or irradiators. The form and type of waste generated is as varied as the products produced. Clothing, containers, equipment, and liquids comprise most of the industrial low-level radioactive wastes. Based upon a survey of low-level radioactive waste generators conducted by the Minnesota Department of Health, industrial use of radioactive materials is expected to experience the largest increase in volume over the next ten years (3.5 times the average annual volume of industrial low-level radioactive waste that was shipped between 1977 and 1979).

Much of the volume of industrially generated low-level radioactive wastes can be reduced by compaction and incineration. Minnesota's major industrial generators already utilize some compaction of wastes with compaction ratios ranging from 3:1 to 4:1. The two most commonly employed radioisotopes in the industrial sector are Iodine 125 and Cesium 137. Figure 2.1 lists the half-life, energy levels and present curies produced in Minnesota for these isotopes.

2.2.3 Medical Waste

Low-level radioactive waste produced in medical institutions are related to the use of radioisotopes for diagnostic and therapeutic purposes. In nuclear medicine, a pharmaceutical is "labeled" with a radionuclide so it can be "traced" through various organs of the body for diagnostic or therapeutic effect. Most of the radioactivity used in medicine is adminstered to patients. The ultimate release of this material is difficult to control because it is normally discharged via patient excreta to the sewer system.

FIGURE 2.4

CURIES OF RADIOACTIVITY SHIPPED 1977-1979

Type of Facility	1977	1978	1979
Medical	320.638 Ci (0.97%)	323.547 Ci (0.49%)	317.515 Ci (2.12%)
Educational	17.084 Ci (0.052%)	16.211 Ci (0.025%)	17.627 Ci (0.118%)
Industrial	3,431.238 Ci (10.41%)	1,777.579 Ci (2.71%)	1,497.744 Ci (10.0%)
Commercial Power Reactor	29,206.800 Ci (88.57%)	63,520.000 Ci (96.77%)	13,142.270 Ci (87.76%)
Governmental	0.000 Ci (0%)	0.000 Ci (0%)	0.000 Ci (0%)
TOTAL	32,975.759 Ci (100%)	65,637.337 Ci (100%)	14,975.155 Ci (100%)

SOURCE: Minnesota Department of Health Low-Level Radioactive Waste Survey, 1981

The wastes that are produced under controlled conditions generally consist of a variety of dry solids and small quantities of aqueous liquids. These wastes generally include disposable syringes, vials, test tubes, absorbant papers, gloves and unused radiopharmaceuticals. Most of the radioactive material used in nuclear medicine consist of short half-lived radionuclides, although some elements such as Carbon 14, can have extremely long half-lives.

Nationally, the per capita number of applications of nuclear medicine has greatly increased during the past decade. The American Cancer Society estimates that over 50% of diagnosed cancer patients receive some form of radiation therapy.[4] Minnesota has several medical institutions such as the Mayo Clinic and University of Minnesota Medical Center that are nationally and internationally known for their diagnostic and treatment facilities. Presently there are no effective alternatives for many of the diagnostic and therapeutic uses of radioactive isotopes in medicine.

Although the use of radioactive materials has steadily increased in the medical profession, the volume of radioactive waste generated per application has been decreasing. The reason for this trend is two-fold. First, there has been a shift toward using radioisotopes with shorter half-lives due to the development of more sensitive laboratory equipment. As a result, hospitals and clinics can temporarily store many short-lived materials until its radioactivity has decayed to a nonhazardous level. Second, there has been an increase in the use of volume reduction techniques. These techniques take the form of both improved procedures (more aggressive waste sorting policies) and technological innovations (mini-scintillation vials). Among the most commonly used radio isotopes for medical purposes are Molybdenum 99, Iodine 125, 131 and Xenon 133. Figure 2.1 lists the half-life, energy levels and curies produced in Minnesota.

2.2.4. Educational/Research Wastes

Radioactive materials are used for research at several universities and private laboratories in Minnesota. In biological research, the behavior, structure, and kinetics of biological systems and biological chemicals are studied by the use of radioactively labeled biochemicals such as Carbon 14. The use of tracers is presently the only analytical and technical method available for investigating living cell and system physiology. The wastes generated through research consists primarily of scintillation liquids, laboratory trash, and contaminated animal carcasses. Nationally, the use of radioisotopes has increased during the past decade at a rate of over 5% annually.[5] Approximately 85% of the research involving radioactive waste production is related to biomedical

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[4] Radiation, Ecker and Bramesco, Vintage Books, 1981.

[5] An Economic Study of the Radionuclides Industry, Nuclear Regulatory Commission, 1980.

research. One aspect of the use of radioactive materials by educational and research institutions of particular significance to Minnesota is the work being done in agricultural research. With the aid of radioactive tracers, scientists are devel-oping disease and drought resistant crops. In addition, efforts are being made to establish crop species that are less dependent upon commercial fertilizers, so as to reduce agriculture's dependence upon phospherous and nitrogen additives.

In Minnesota, the increased use of radioisotopes for research will likely follow the national trend. Although the use of radioactive material will likely increase in reserach activities, the volume of waste generated may be offset by use of volume reduction techniques. The largest educational waste producer, the University of Minnesota, already uses some compaction of wastes as a means to reduce its volume.

2.3 LOW-LEVEL RADIOACTIVE WASTE SHIPPERS

2.3.1 Survey of Generators

In order to develop a profile of low-level radioactive waste generators and shipppers, the Minnesota Department of Health conducted a survey of all licensed radioactive materials users operating in the state. The survey is included in Appendix B-1. The Department of Health Survey indicates that there are 188 facilities in the state that use radioactive materials. These facilities hold 248 licenses from the Nuclear Regulatory Commission (see Appendix B-2 for a complete list of licensed facilities).

2.3.2 Waste Shippers

Of the 188 facilities using radioactive materials only 22 facilities are identified as shippers of low-level radioactive waste. These shippers send the low-level radioactive wastes to the commercial disposal sites at Hanford, Washington; Beatty, Nevada; and Barnwell, South Carolina. All three of these sites are shallow land burial sites. For those facilities not shipping wastes, Figure 2.5 illustrates the methods of disposal presently being utilized.

2.3.3 Volume of Waste

The total volume of wastes shipped from Minnesota has steadily increased over the past several years. The average annual volume of low-level radioactive wastes shipped for shallow land disposal during the 1977-1979 period was 53,717 cu. ft. (1521.09 cu. m).[6] This volume of waste makes Minnesota the 15th largest producer of low-level radioactive waste in the nation. Based upon projected estimates of low-level radioactive waste, Minnesota can expect an increase of 36% by 1985 and 74% by 1990 over the average volume shipped between 1977-1979. (See Figure 2.3)

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[6]Minnesota Department of Health, Low-Level Radioactive Waste in Minnesota, 1981.

FIGURE 2.5

LOW-LEVEL RADIOACTIVE WASTE DISPOSAL IN MINNESOTA

Method of Disposal	Number of Waste Generators Using the Method
Ship to Commercial Repository	22
Release to Sewer	47
Separate from Common Refuse	14
Combine with Common Refuse	9
Vent to Atmosphere	19
Bury on Site	0
Return to Vendor	83
Distribute in Product Form	9
Incineration	9
No Waste Generated	82
Temporary on Site Storage	74
a. Decay to Background	66
b. Spent Fuel Assembly	2
c. Fill 55 Gallon Drum	3
d. Fill Truckload	5
e. Other	2
Other	
a. Return for Maintenance	1
b. Return to Company's Main Plant	2

Low-Level Radioactive Waste in Minnesota
Source: Minnesota Department of Health, 1981

Commercial power reactors ship the largest volume of wastes and industrially generated low-level radioactive wastes have experienced the greatest percentage increase of all generator groups. The volume of medically related low-level radioactive wastes has been decreasing due to greater use of volume reduction practices and more reliance upon short-lived isotopes. Figure 2.5 indicates the volumes, type of waste and nuclides shipped for disposal by the twenty-two shippers in the state. As can be seen from the figures, six shippers account for approximately 90% of the wastes shipped to disposal facilities.

2.4 VOLUME REDUCTION AND ON-SITE PROCESSING

Some form of on-site processing of wastes prior to shipment is employed by 16 of the 22 waste shippers in Minnesota. The methods of waste processing most often used by the shippers include: absorption of liquids; solidification; incineration; and mechanical compaction. Absorption and solidification are undertaken to comply with U.S. Department of Transportation, Nuclear Regulatory Commission and disposal site regulations. The type of on-site processing employed by the 22 waste shippers is listed in Figure 2.6.

Efforts to reduce the volume of low-level radioactive waste are being practiced by many of the waste generators. The most effective method of volume reduction is to undertake programs designed to minimize the production of wastes. Methods presently employed by generators to reduce the production of waste include: development of preventive maintenance programs; selection of leak-tight valves and containers; waste segreation; operator training; improved housekeeping procedures; and movement away from the use of long half-life materials to shorten half-life materials when possible. Other efforts at volume reduction focus on reducing the bulk of the waste produced. This is accomplished primarily in two ways--mechanical compaction and incineration. Figure 2.5 identifies the bulk volume reduction practices used by Minnesota's waste shippers. Compaction is used by eight of Minnesota's low-level radioactive waste shippers. These eight shippers account for nearly 95% of the total volume of waste shipped from Minnesota. The compaction ratios of these generators vary from 2.5:1 to 5:1. This provides a 60-80% reduction in total volume.

Much of the low-level waste produced is combustible. A material is considered combustible if it can be ignited or if it can react exothermally with air by any physical or chemical means. Normally combustible wastes include materials such as paper, plastics, rubbers, ion exchange resins, solvents, etc. Combustion serves not only to reduce the volume and weight of the waste, but it also converts the waste to more inert or less reactive forms. The level of volume reduction achieved by incineration varies by the type of waste being incinerated. For example, sciutillation fluid volume can be reduced by over 90%, whereas incineration of animal carcusses can reduce the waste volume by approximately 50%. Presently nine of the generators of low-level waste in Minnesota incinerate their wastes. Of the twenty-two shippers of waste only one producer--Mayo Clinic--incinerates a portion of its wastes. One other shipper, Honeywell, is considering an incineration system.

LOW LEVEL RADIOACTIVE WASTE SURVEY OF MINNESOTA'S 22 SHIPPERS

INSTITUTION	VOLUME (in cubic feet)						METHODS OF VOLUME REDUCTION	NUCLIDES	% OF WASTE TYPE
	1977	1978	1979	1980	1985	1990			
SIX MAJOR GENERATORS:									
NSP–Monticello	20,400	17,700	16,700	26,200	26,700	32,600	solidify (increase), compaction 2.5:1	^{54}Mn, ^{60}Co*, ^{65}Zn, ^{51}Cr, ^{137}Cs, ^{140}La, ^{131}I, ^{134}Cs, ^{140}Ba	50% – dry 50% – sludges
NSP–Prairie Island	22,700	6,900	703	7,500	7,500	7,500	solidify, compaction 2.5:1	^{54}Mn, ^{57}Co, ^{58}Co, ^{124}Sb, ^{60}Co, ^{95}Nb, ^{134}Cs, ^{137}Cs, ^{95}Zr	57% – dry 43% – sludges
U of Minn.	5,250	6,900	10,000	7,000	10,000	14,000	compaction 3.5:1	many	40% – scintillation 25% – dry 20% – other liquid 15% – carcasses
3M	540	4,095	8,160	8,000	12,000	15,000	compaction 5:1	depleted uranium only	95% – sludges
Honeywell	4,495	5,535	2,195	6,000	9,500	15,000	ship, solidify, compaction 4:1, absorption (can store as long as needed)	^{137}Cs*, ^{90}Sr, ^{210}Po, ^{147}Pm, ^{169}Yb, ^{60}Co	95% – dry
Kallestad Lab	775	975	875	1,450	2,500	4,200	absorption only	^{3}H, ^{125}I*	80% – dry 20% – liquid
Subtotal:	54,160	42,105	38,633	56,150	68,200	88,300			
HOSPITALS, CLINICS, MED. CENTERS:									
Vets. Admin.	300	300	200	0	0	0	compaction 3:1	^{3}H*, ^{125}I	100% – carcasses
Methodist Hosp.	61	68	75	75	intend to cease shipping		added absorbent	^{14}C*, ^{125}I	100% – liquids
Mpls. War Memorial	141	348	111	120	150	150	absorption of liquid	^{125}I	60% – liquid 40% – dry
St. Paul Ramsey	600	800	1,000	1,200	2,000	2,400	ship, store, sewer	^{3}H, ^{14}C, ^{125}I*	60% – scintillation 35% – dry 5% – carcasses
Hennepin Co. Med. Center	28.5	23	31	121	250	400	compaction 5:1	^{3}H, ^{14}C, ^{35}S, ^{51}Cr, ^{125}I, ^{131}I	30% – scintillation 30% – absorb liquids 20% – carcasses 15% – dry
Mayo Clinic	3,464	3,587	2,829	2,264	2,000	?	compaction, incineration	many	85% – dry 15% – liquid
Childrens	52	67	37	90	150	200	absorption only	^{3}H only	80% – scintillation
Subtotal:	4,646.5	5,193	4,283	3,870	4,550	3,150			

Figure 2-6

Major waste type

(continued)

INSTITUTION	VOLUME (in cubic feet) 1977	1978	1979	1980	1985	1990	METHODS OF VOLUME REDUCTION	NUCLIDES	% OF WASTE TYPE
INDUSTRY:									
Molecular Genetics	0	0	0	22.5	75	75	absorption of liquid	no information	90% - liquids
Lake Center Inds.	5	1	0	0	0	0	return to vendor	^{241}Am (smoke detectors)	100% - sealed
Sperry Univac	0	0	0	0	10	0	no volume reduction, return to vendor	no information	50% - dry elimination 50% - static elimina.
Immuno Nuclear	255	417	375	560	0	0	store to decay >1980	^{125}I*, ^{3}H, ^{57}Co	95% - dry 5% - liquids
Subtotal:	260	418	375	582.5	85	75			
COLLEGES:									
Carleton	none	none	none	8	16	16	no compaction	no information	90% - scintillation
Gustavus Adolphus	0	0	0	?	?	?	ship, no compaction	no information	80% - scintillation
Bethel	0	0	0	0	0	0-5	compacted in storage	no information	75% - dry 25% - scintillation
Bemidji State	7.5	7.5	7.5	0	7.5	7.5	no compaction, ship, store	^{3}H, ^{14}C*	75% - dry 10% - carcasses 5% - liquids
Subtotal:	7.5	7.5	7.5	8	23.5	28.5			
FEDERAL AGENCY:									
USEPA-Duluth	none	none	none	36.75	36.75	36.75	absorption of liquids	^{14}C	70% - scintillation
Subtotal:	0	0	0	36.75	36.75	36.75			

Year	1977	1978	1979	1980	1985	1990
TOTAL:	59,074	47,723½	43,298½	60,647½	72,895½	91,590½

*Major waste type

Although compaction and incineration reduce the bulk volume of the low-level radioactive wastes, it does not eliminate the waste's radioactivity. In fact, by reducing the volume, the concentration of radioactive material is often increased. If the concentrations are high enough, special handling and shipping requirements may be necessary. As such, it is important to remain sensitive to the trade-off point at which the radiation exposure created by the concentration process, as well as the creation of secondary waste, may impose a greater penalty for handling, transporation and burial practices than the savings derived from the bulk volume reduction.

Even with continued reductions in the creation of waste and greater reliance upon bulk volume reduction techniques such as compaction and incineration, the basic problem of disposal still remains. Within Minnesota, public and commercial activities generate enough low-level radioactive waste to warrent a detailed review of disposal options available to the state.

chapter 3

CHAPTER 3

GENERAL LOW-LEVEL RADIOACTIVE WASTE DISPOSAL OPTIONS

With the passage of the National Low-Level Radioactive Waste Policy Act, Minnesota is required to ensure that adequate disposal capacity for low-level radioactive wastes generated within its borders is provided. In general, the state has two options for achieving this goal. These are:

> Option 1. The state can develop a low-level radioactive waste disposal facility in Minnesota for exclusive use by Minnesota waste generators.
>
> Option 2. The state can join a regional interstate compact. The compact would establish a framework for identifying a disposal facility within the compact region. This disposal facility would be developed for exclusive use by waste generators located within states that are members of the compact.

A more detailed discussion of the advantages and limitations of each option is outlined below.

3.1 OPTION 1: A MINNESOTA SITE FOR EXCLUSIVE USE BY MINNESOTA GENERATORS.

The Federal Low-Level Radioactive Waste Policy Act states that:

> ". . . 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. . ."

While this portion of the Act enables individual states to pursue the option of establishing allow-level radioactive waste disposal facility within its boundaries, it does not address the issue of exclusive use of that facility by genertors located within the state. The only provision in the Act for exclusive use of a disposal facility is in reference to the development of a low-level radioactive waste compact. The Act states:

> "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. . . After January 1, 1986, any such compact may restrict the use of the regional disposal facilities under the compact to the disposal of low-level radioactive waste generated within the region."

As a result, the option of a state electing to develop a disposal site for the sole use by generators within the state is riddled with legal unknowns. The overall economics of a single state developing a disposal facility is also frought with uncertainties. Due in part to these uncertainties, only one state (Texas) is actively pursuing the concept

of developing a disposal facility for the exclusive use of its generators. Two other large low-level waste producing states--Illinois (fourth largest U.S. producer) and North Carolina (fifth largest U.S. producer) have also considered developing an exclusive disposal site. North Carolina conducted an economic viability study and concluded that operating a facility just for use by its generators was not economically attractive.[1] Illinois is still leaving that option open but the state is also actively participating in the Midwest States Compact discussions.

The State of California, while not actively pursuing a go it alone option presently, may be forced to do so in the near future. California is the nation's seventh largest low-level radioactive waste producer and the state has not been successful in entering compact discussions with surrounding states.

3.1.1 Advantages.

This "go it alone" option provides the most autonomy for a state in several key areas. First, the state chooses to become a host state on its own initiative. (By going it alone a state automatically assumes it will be a host state). Second, the state has control over the amount and type of out-of-state wastes it will accept--if any. (This advantage assumes a single state not in a compact can legally exclude waste.) Third, the state has greater control over the fee structure and disposal rates. In addition, this option also permits the state to maximize any potential revenue benefits that a disposal site might generate.

3.1.2 Disadvantages.

Although a state retains autonomy over important decisions related to low-level radioactive waste disposal, the go-it-alone option has four major disadvantages. These disadvantages include: 1) general economic constraints; 2) unresolved legal issues; 3) knowledge that the state will be assured of hosting a disposal facility; and 4) potential conflicts between the state's role as a site operator and a site regulator.

1. Economic Considerations of a Disposal Site.

   To provide adequate disposal capacity without subjecting a state to financially supporting major portions of the cost of development and operation of a site, requires a careful assessment of the economics of site development and operation. Disposal activities should be developed so that, in the long run, they will be self-supporting.

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1 Low-Level Radioactive Waste Management--An Economic Assessment Southern States Energy Board, July, 1981.

In general, a low-level radioactive waste disposal program will function on a sound economic basis when there is an adequate volume of waste available.[2] Presently, existing low-level radioactive waste disposal sites are operated as a private commercial enterprise. Site operators finance their investment, operation and closure costs, through disposal fees imposed on site users. These fees are based primarily on the volume of waste being disposed, although special surcharges or rates may be imposed on wastes requiring special handling or re-packaging.

The rate and amount of volume received by a facility helps to define the licensed operating life of the site. Producers of large volumes of waste place a greater demand on the available disposal space of a site. A volume oriented fee schedule therefore best reflects the impact that a waste generator imposes on the operating life of a facility. Other characteristics of the waste, such as levels of radioactivity, half-life, concentration and stability are considered in the initial classification of the waste and the establishment of specific disposal requirements and handling fees.

Because the money collected from disposal fees are used to finance the operation and closure of the site, the fee structure and disposal rate has an influence on a site's long term economic vitality. If disposal fees are set too high, the disposal facility may not remain competitive with other disposal methods or options. To some extent the Federal Low-Level Radioactive Waste Policy Act has modified the traditional competitive nature of waste disposal. The Act, however, does not totally eliminate competition nor does it confir a monopoly for waste disposal on any given disposal facility. The Act merely provides an interstate compact with the ability to restrict the use of its disposal facilities to wastes generated within the compact. This is not to say that every compact is compelled to exclude wastes. In fact, some compact groups seeking to reduce the costs of disposal for its members, could selectively seek the importation of waste. The Act also does not impose an export restriction on waste generators. This means if generators are permitted disposal options outside of a state or region, the export of waste can not be prevented. Finally, alternative disposal practices that individual generators might employ such as increased use of on-site storage and incineration become more economically attractive as disposal costs increase. On site-storage and incineration are governed in non-agreement states by the NRC through the radioactive material users license.

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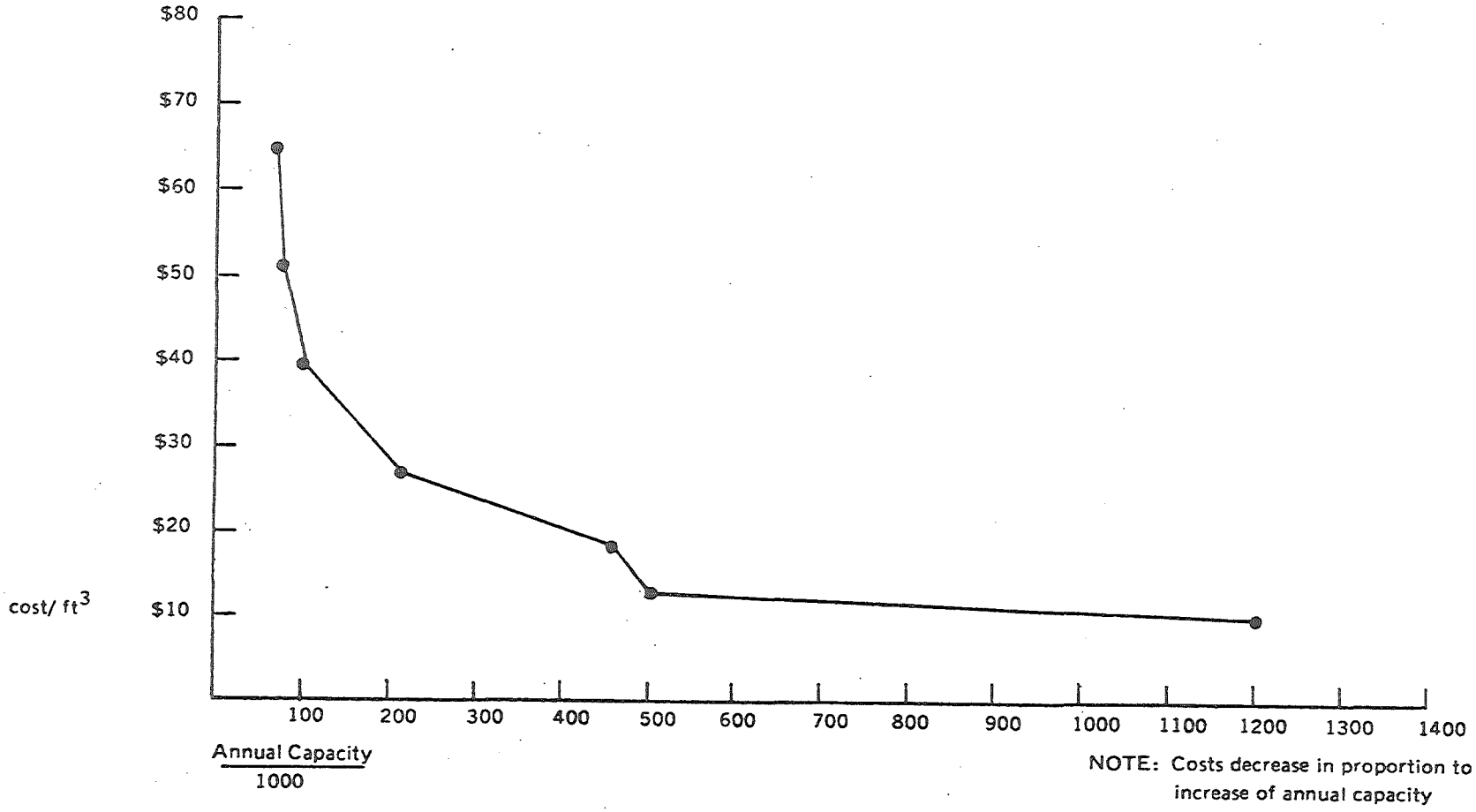
[2] Low-Level Radioactive Waste Management--An Economic Assessment, Southern States Energy Board, July, 1981.

Figure 3-1

Costs Per Cubic Foot for Different Sized Facilities



Source: Technical Report: Low-Level Radioactive Waste Management, An Economic Assessment. State Planning Council on Radioactive Waste Management, 1981.

The impact that volume and the disposal fees have on the financial operation of a disposal site are, therefore, important factors to consider if a state elects to "go-it-alone". If the per unit cost for disposal is high enough to encourage substitute disposal methods, an operator of a disposal site may require some form of subsidy to remain in operation.

The Task Force has not developed an independent assessment of how high a disposal fee would have to be in Minnesota before alternative disposal options are more economically attractive. As a general rule of thumb, however, the State Planning Council on Radioactive Waste Management suggests that 300,000 cubic feet of waste per year is the minimum at which a low-level radioactive waste disposal site can operate in a self supporting way. With a 1980 volume of 64,680 cubic feet, a Minnesota site would have to levy disposal fees of $40-$65 per cubic feet of waste disposed. These disposal fees would be four to five times the present disposal rates. Figure 3-1 illustrates the economy of scale principle in operating a disposal facility, as well as estimated costs per cubic foot of developing a facility to receive different volumes of waste. The costs can be divided into: pre-operation costs, operating costs, and post operating costs.

a. Pre-operating Costs. (11-25 million dollars)

Pre-operation costs include siting, licensing, land acquisition, monitoring equipment and the construction of the facility. Siting and development of a facility does not come cheaply. It is estimated by the Nuclear Regulatory Commission that siting alone may range from 3 to 5 million dollars. The State of Texas, as part of its "Low-Level Radioactive Waste Authority Act" has allocated 3.5 million dollars for siting costs during the biennium beginning September 1, 1981. Figure 3-2 provides a breakdown of pre-operating cost likely to be incurred in establishing a site to accommodate the volume of waste generated in Minnesota. Pre-operation costs are factored into the facility's disposal fee. The fee is designed to "pay back" the site developer for these costs in a timely manner. It is important to note however, that the fees only begin to provide revenue after the site is operational. As such, pre-operating costs require a private site developer or the state (if it is the site developer) to make a minimum initial investment of 11 million dollars. If there is insufficient volume at the disposal site to enable a timely return on preoperation capital investments, the facility could experience financial losses and require some form of subsidy.

b. Operating Costs. (48-83 million dollars)

Operating costs are those costs that are incurred in the process of managing and disposing of low-level radioactive waste. Most of these costs are related to the number of employees needed to manage the site. For a site accepting 70,000 - 75,000 cubic feet per year, it is estimated that a total of

Figure 3.2

Pre-Operating Costs in Millions of 1985 Dollars

Source	1	2	3	1	1	3	1	2	3
Size Facility ft^3/yr	70,000	75,000	100,000	215,000	460,000	500,000	1,200,000	1,200,000	1,200,000
Years of Operation	20	20	30	20	20	30	20	20	30
Capacity in ft^3	3,400,000	1,500,000	3,000,000	10,308,000	22,000,000	15,000,000	57,000,000	24,000,000	36,000,000
Land	.093[a]	.542	.039[b]	.174[a]	.306[a]	.135[b]	.683[a]	.825	.295[b]
Structures	3.6[c]	2.1	.869[d]	4.0[c]	4.4[c]	1.182[d]	4.86[c]	2.40	1.34[d]
Equipment	2.889	2.7	2.183	2.889	4.093	2.908	4.093	4.10	3.96
Environmental Monitoring	.149		.385	.260	.312	.589	.573		.999
Personnel		.525						.525	
Security	.40		.176	.544	.722	.344	1.079		.506
Sal. & Sup. during constr.			2.257			2.656			4.292
Licensing	4.0	4.5	1.464	4.0	4.0	2.196	4.0	4.5	3.66
Finance Charge		13.993[e]	44.282[f]			60.103[f]		16.65[e]	90.418[f]
Profit			10.33			14.022			21.094
Total Pre-Op Costs	11.131	24.36	61.985	11.867	13.833	84.135	15.288	29.00	126.564
Costs per ft^3 waste	$3.27	$16.64	$20.66	$1.15	$ .63	$5.61	$ .27	$1.21	$3.52

a. Land costs $2,000 per acre and disposal density of 325,000 ft^3/acre.
b. Land costs $2,050 per acre and disposal density of 300,000 ft^3/acre.
c. Structures cost between $65 and $80 per square foot.
d. Structures cost between $31 and $89 per square foot.
e. 20 year loan at 10% interest on balance of pre-operating costs.
f. 35 year loan at 20% interest on balance of pre-operating costs.
Sources: 1. Economics of Low-Level Waste Disposal, EG&G Idaho, In.
2. Economics of Establishing a Low-Level Waste Disposal Facility in 1985, Herb Oakley.
3. Economics of Low-Level Radioactive Waste Disposal

Source: Technical Report: Low-Level Radioactive Waste Management, An Economic Assessment. State Planning Council on Radioactive Waste Management, 1981.

Figure 3.3

Operating Costs in Millions of 1985 Dollars

Source	1	2	3	1	1	3	1	2	3
Size facility ft^3/yr	70,000	75,000	100,000	215,000	460,000	500,000	1,200,000	1,200,000	1,200,000
Number of Employees	36	40	21	44	64	42	98	100	66
Wages	3.768[a]	1.580[b]	.612[c]	4.391[a]	5.92[a]	1.212[c]	8.332[a]	3.95[b]	2.151[c]
Mat., Supp. & Consumables	.174	.30	.368	.33	.448	.727	.797	1.0	1.291
Equipment Replacement	.250		.269	.250	.325	.492	.325		.785
Regulatory Costs		.175	.038			.044		.175	.057
Environmental Monitoring		.175	.036			.039		.241	.044
Contingencies		.175						.50	
Profit			.265			.503			.865
Total Operating cost/yr	4.192	2.405	1.588	4.971	6.693	3.017	9.454	5.866	5.193
Operating Costs ft^3/yr	$59.88	$32.06	$15.88	$23.12	$14.55	$6.03	$7.88	$4.89	$4.33

a. Includes 150% overhead
b. Salaries and benefits
c. 20% fringe added

Sources: 1. Economics of Low-Level Waste Disposal, EG&G Idaho, Inc.
2. Economics of Establishing a Low-Level Waste Disposal Facility in 1985, Herb Oakley.
3. Economics of Low-Level Radioactive Waste Disposal

Source: Technical Report: Low-Level Radioactive Waste Management, An Economic Assessment. State Planning Council on Radioactive Waste Management, 1981.

36-40 employees would be needed. Figure 3-3 illustrates the annual operating costs of a disposal facility. If Minnesota elected to operate the site itself, it would cost the state, over the 20 year operating life of the disposal facility, 48 to 83 million dollars. Again, most of these costs could be recovered through the disposal fee levy.

c. Post Operating Costs. (4-6 million dollars)

After the disposal facility has reached its storage capacity, the facility must be decommissioned. This is known as post-operating cost and includes all expenses incurred in closing the site, removing buildings, stabilizing soil, etc. All of the decommissioning costs are the responsibility of the site operator. In addition to decommissioning the site, the site must be monitored, maintained and policed for a period of up to 100 years. This is known as long-term care of the facility. Figure 3-4 illustrates the estimated post-operating costs for a disposal facility. The amount of financial resources needed for long-term care is presently under review. The funds set aside for long-term care at Maxey Flats has proved to be insufficient. The operators at Hanford have recently increased their fee levy for long-term care.

Altogether, the costs for developing and operating a low-level radioactive waste disposal facility are significant (63 to 114 million dollars over the 20 year life of a site). Based upon the existing and projected volume of low-level radioactive waste generated in Minnesota, it is debatable as to the economic feasibility of a small disposal facility developed exclusively for Minnesota generated waste.

2. Unresolved Legal Issues.

The basic legal question concerning Option 1 is whether a state can authorize a low-level radioactive waste disposal facility to be used exclusively by waste generators within the state. At issue is the Interstate Commerce Clause of the U.S. Constitution. It can be argued that a state limiting the use of a disposal site within its borders for exclusive use by state generators is an unconstitutional state restriction on interstate commerce. There is legal precedent to support this agrument.

In Philadelphia v. New Jersey, 437 U.S. 617 (1978), the U.S. Supreme Court invalidated a New Jersey statute that prohibited the importation of solid and liquid waste generated out of the state unless that waste met stringent standards established by the State of New Jersey. No similar limitation was placed on waste generated within New Jersey. The plaintiffs in the case were the operators of private landfills in New Jersey whose profits depended on interstate shipment of wastes. The Court decided in favor of the private site operators by declaring the New Jersey legislation an unconstitutional restriction on interstate trade.

Figure 3.4

Post-Operating Costs in Millions of 1985 Dollars

Source	1	2	3	1	1	3	1	2	3
Size facility ft^3/year	70,000	75,000	100,000	215,000	460,000	500,000	1,200,000	1,200,000	1,200,000
Decomission-ing			.396			.612			.868
Extended Care	6.188[a]	3.75[a]	7.627[b]	20.822[a]	51.70[a]	11.206[b]	154.470[a]	36.0[a]	14.945[b]
Total Post-Op Costs	6.188	3.75	8.023	20.822	51.70	11.818	154.470	36.0	15.813
Post-Operating Costs/ft^3	$1.82	$2.50	$2.67	$2.02	$2.35	$.79	$2.71	$2.50	$.44

a. For decommissioning and extended care. Length of extended care period not specified.
b. Extended care to last 100 years.
Sources: 1. Economics of Low-Level Waste Disposal, EG&G Idaho, Inc.
2. Economics of Establishing a Low-Level Waste Disposal Facility in 1985, Herb Oakley.
3. Economics of Low-Level Radioactive Waste Disposal

Source: Technical Report: Low-Level Radioactive Waste Management, An Economic Assessment. State Planning Council on Radioactive Waste Management, 1981.

Only the State of Texas is seeking to develop a site for the exclusive use of its generators. In its efforts to establish a state disposal facility, Texas is seeking to resolve the potential Constitutional problem by developing a rather unique regulatory scheme for controlling out-of-state disposal. This system is outlined in the Texas Low-Level Radioactive Waste Disposal Authority Act, passed on May 28, 1981. (See Appendix C for the complete Act.) The Act does not, by itself, restrict the importation of low-level radioactive waste into the state, nor does it attempt to reserve all potential sites in the state for Texas generated waste. Instead, the Act proposes to establish a disposal facility that will be developed, managed and owned by the state. The Act still allows for privately owned disposal sites to engage in the importation of radioactive wastes.

Some attorneys argue that restrictions on out-of-state wastes are legal if applied to a state owned and managed disposal facility. Attorneys use as the basis for this argument, the U.S. Supreme Court case of Reeves v. Stake 100 SCt. 2271 (1980). In this particular case, the Court has stated that the Commerce Clause of the U.S. Constitution "...responds principally to state taxes and regulatory measures impeding free private trade in the national marketplace." The Court said that private traders or manufacturers have a recognized right to exercise their "...own independent discretion as to parties with whom [they] will deal." The Court further noted, that "...when acting as proprietors, a state should similarly share existing freedoms from federal constraints including any limits of the Commerce Clause." By owning and operating the disposal site, the State of Texas becomes a "proprietor" and can therefore decide what parties it wishes to do business with.

Although the State of Texas thinks it has a sound legal argument, it is fair to state that issues of Federal Constitutional law can rarely be assured. This is especially true where there is an absense of litigation dealing specifically with the issue of low-level radioactive waste. For these reasons, Minnesota should fully recognize the legal uncertainties and potential problems that it faces if the state elects to go-it-alone.

3. Location of a Site.

One obvious disadvantage of the state electing to develop a site for use by Minnesota generators is that a low-level radioactive waste disposal facility would have to be developed somewhere within the state. Under the interstate compact option there is a possibility that the regional disposal site would not be located in Minnesota. Factors such as transportation and location within the compact regions may reduce Minnesota's attractiveness as a host state.

4. Conflict of State Responsibilities.

If a state elects to go-it-alone, the legal uncertainties favor the state owning and operating the facility. This presents a difficult

and unique problem in that the state may be placed in the position of regulating its own actions. As such state decisions and interests as a site operator may not be compatible with the state's decisions as a trustee for the public health, safety and welfare.

3.2 OPTION 2: INTERSTATE COMPACT

The Federal Low-Level Radioactive Waste Policy Act, Congress declared that "...low-level radioactive waste can be most safely and efficiently managed on a regional basis." To encourage the regional approach, Congress supported the concept of states joining interstate compacts for the purpose of managing and disposing of low-level radioactive waste. A compact is a binding legal instrument used to facilitate formal cooperation between states. In recent years, Minnesota has become a party to several interstate compacts dealing with education, law enforcement, pollution control, and professional licensing issues. In essence, a compact is a contract between states that has the force of statutory law. As a result, it can only be amended, modified or terminated by the terms outlined within the compact itself.

For an interstate compact to become valid, each party state must enact by legislative action the same general compact language. In addition, the compact must receive approval from Congress. The use of an interstate compact for low-level radioactive waste appears to be the most desirable approach for the vast majority of states. With the exception of Texas and California, every state is actively pursuing the development and adoption of an interstate compact. The use of an interstate compact for low-level radioactive waste management has several advantages and disadvantages.

3.2.1 Advantages.

The major advantages to an interstate compact approach are as follows:

1. A compact enables several states to formally join together to ensure that low-level radioactive wastes generated within the region will be adequately managed and disposed.

2. A compact provides assurance to a state hosting a regional disposal facility that the disposal operation will be economically viable.

3. A compact limits the number of disposal sites within the region. It also establishes general criteria for site selection. This helps to insure that the most regionally acceptable and environmentally suitable sites for disposal are selected.

4. A compact allows all states to share in the responsibility, benefits, and burdens of a low-level radioactive waste site.

5. A compact enables a group of states to establish an exclusive right for the use of a regional disposal facility.

3.2.1 Disadvantages.

The disadvantages of an interstate compact are twofold. First, a compact may limit a state's autonomy with regard to low-level radioactive waste disposal. Second, a compact supercedes state law.

3.2.3. Issues for a Compact to Consider.

A regional compact is a document that is designed and drafted by its signitories. As such, it reflects the common intentions, needs and wishes of all the party states. There are seven low-level radioactive waste compact groups which have started to develop across the nation. Although these groupings of states cover different regions with unique conditions, there is a great deal of similarity among all of the compact documents. In general, all compacts address the following major issues. Some of the specifics as to how these issues are addressed are discussed in Chapter 4.

1. Selection of a site. This is the basic reason for the compact. Each compact outlines general criteria for site selection and defines how a "host state" will be selected.

2. Site operation. The Nuclear Regulatory Commission requires that a disposal facility be located on government land. The operation of a facility, however, can be carried on by a private contractor. The compact describes how a site operator may be selected.

3. Establishment of an Interstate Commission. The compact must be administered by an interstate governing council. The basic issues addressed in the compacts revolve around how strong or weak this Commission should be.

4. Rights of States. The compact must outline the rights and obligations of each party state. Because a compact takes precedence over state law, it is important that all party states support the obligations listed in the compact.

5. Costs. The compacts detail how disposal costs, long-term care costs and administrative costs are to be determined and who will be responsible for paying them.

3.3 STATUS OF LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT OPTIONS IN THE UNITED STATES.

Forty-eight states have actively participated in the negotiation and establishment of seven regional groupings of states. Since Congress gave the states complete latitude in forming the regions, individual states have been seeking to align themselves with the most advantageous grouping as possible. Minnesota is one of thirteen states that have

been discussing their options with more than one compact group.[3] Figures 3.5 through 3.8 illustrate the various potential compact groupings that have developed. Figure 3.9 is a chart listing the various compact groups and the overall progress that the groups have made toward adopting a final compact. To date, 19 states have adopted or taken legislative action directed toward the adoption of low-level radioactive waste compacts. (See Figure 3.10)

Understandably, the compact groups containing states with existing disposal sites (Northwest Compact and Southern States Compact) are the furthest along in having all eligible states adopt the compact. In the Southern States Compact group only North Carolina has not introduced the Compact to its legislature for adoption. North Carolina's 1982 Legislative Session, however, does not begin until June 2, 1982. It is expected that the state will act on the compact during the 1982 session. In the Northwestern States Compact, only Alaska and Wyoming have failed to act this year, however, both states are expected to introduce legislation at the beginning of their next sessions.

Minnesota is listed as an eligible state in the Central States and Midwest States compacts. The following section provides a historical review of how negotiations have proceeded in the two compact groups.

3.3.1 Central States Compact.

The Central States Compact group first began meeting in early 1981. The initial meeting was convened by Joseph Harkins, Secretary of the Kansas Department of Health and Environment and consisted of representatives from the states of Kansas, Oklahoma and Missouri.

On April 28, 1981 the Southern States Energy Board hosted a meeting in Oklahoma City to initiate additional interest in the Central States group. At that meeting seven states (Kansas, Oklahoma, Missouri, Arkansas, Louisiana, New Mexico and Texas) agreed that with the assistance of R. J. Peery, attorney for the Southern States Energy Board, an interstate compact should be drafted.

By July, 1981 Texas and New Mexico dropped out of the negotiations but the states of Nebraska and Iowa joined the compact development process. Several key compact positions concerning Interstate Commission powers, designation of a siting process and funding were discussed and integrated into a draft compact document.

Minnesota did not begin meeting with the Central States Compact group until October 1981 after Minnesota requested admission to the compact

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[3]The states negotiating with more than one compact group are: Delaware, Iowa, Maryland, Minnesota, Missouri, Nebraska, North Dakota, North Carolina, Kansas, Kentucky, Virginia, Utah and Wyoming.

Figure 3.5

PROPOSED NORTHWEST AND SOUTHEAST COMPACTS

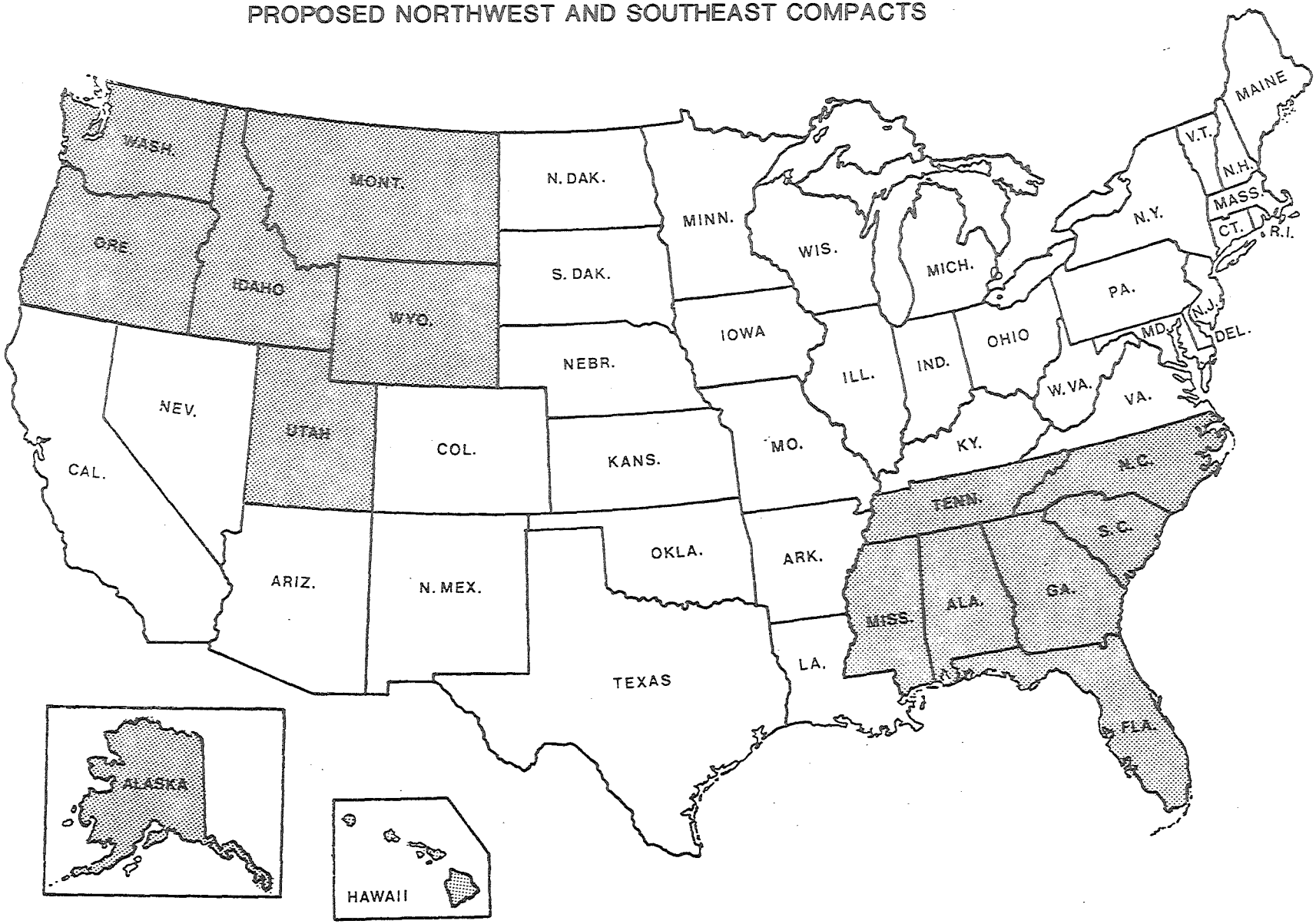


Figure 3.6

PROPOSED ROCKY MOUNTAIN, MID-ATLANTIC AND NORTHEASTERN STATES COMPACTS

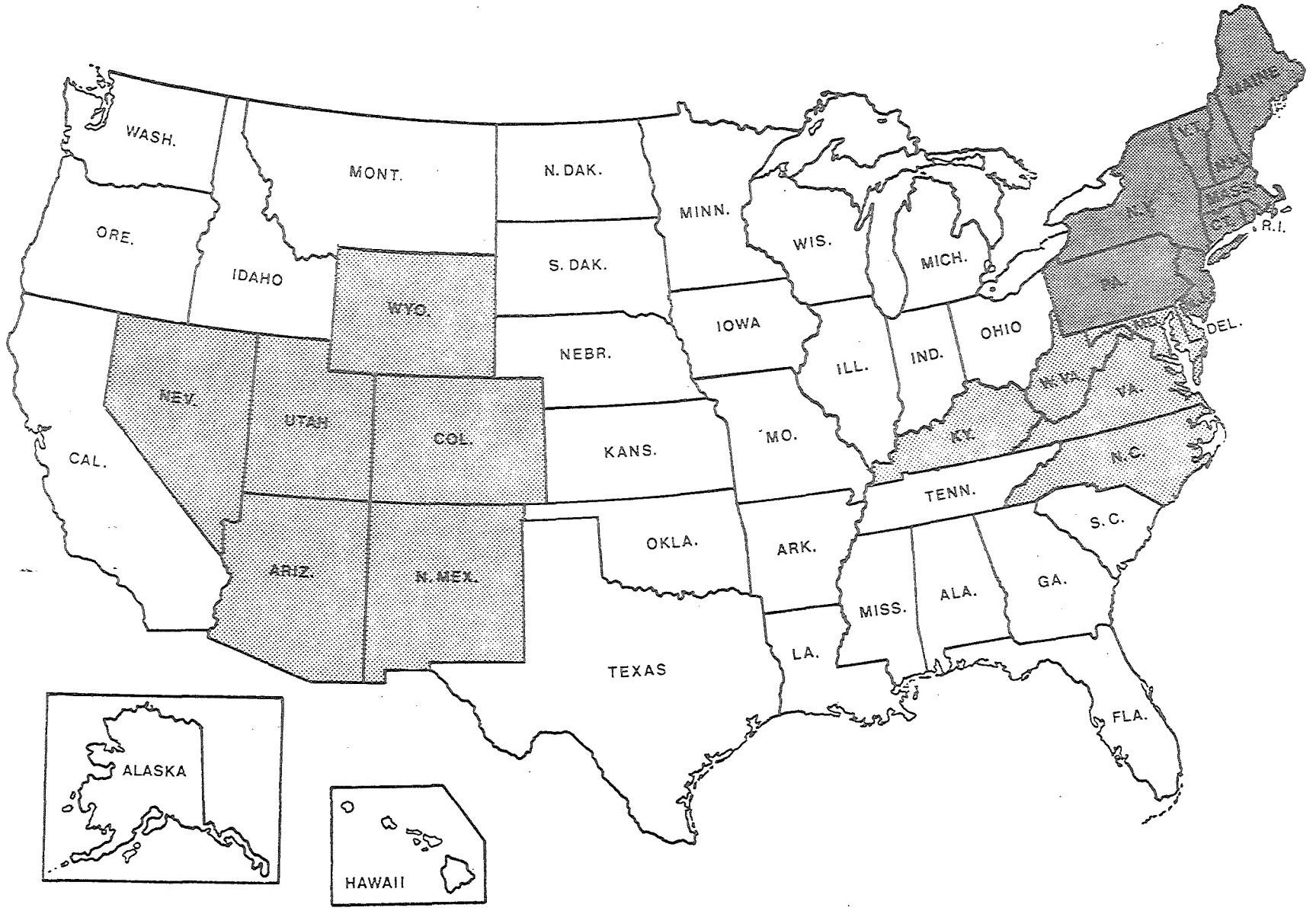


Figure 3.7

PROPOSED CENTRAL STATES COMPACT

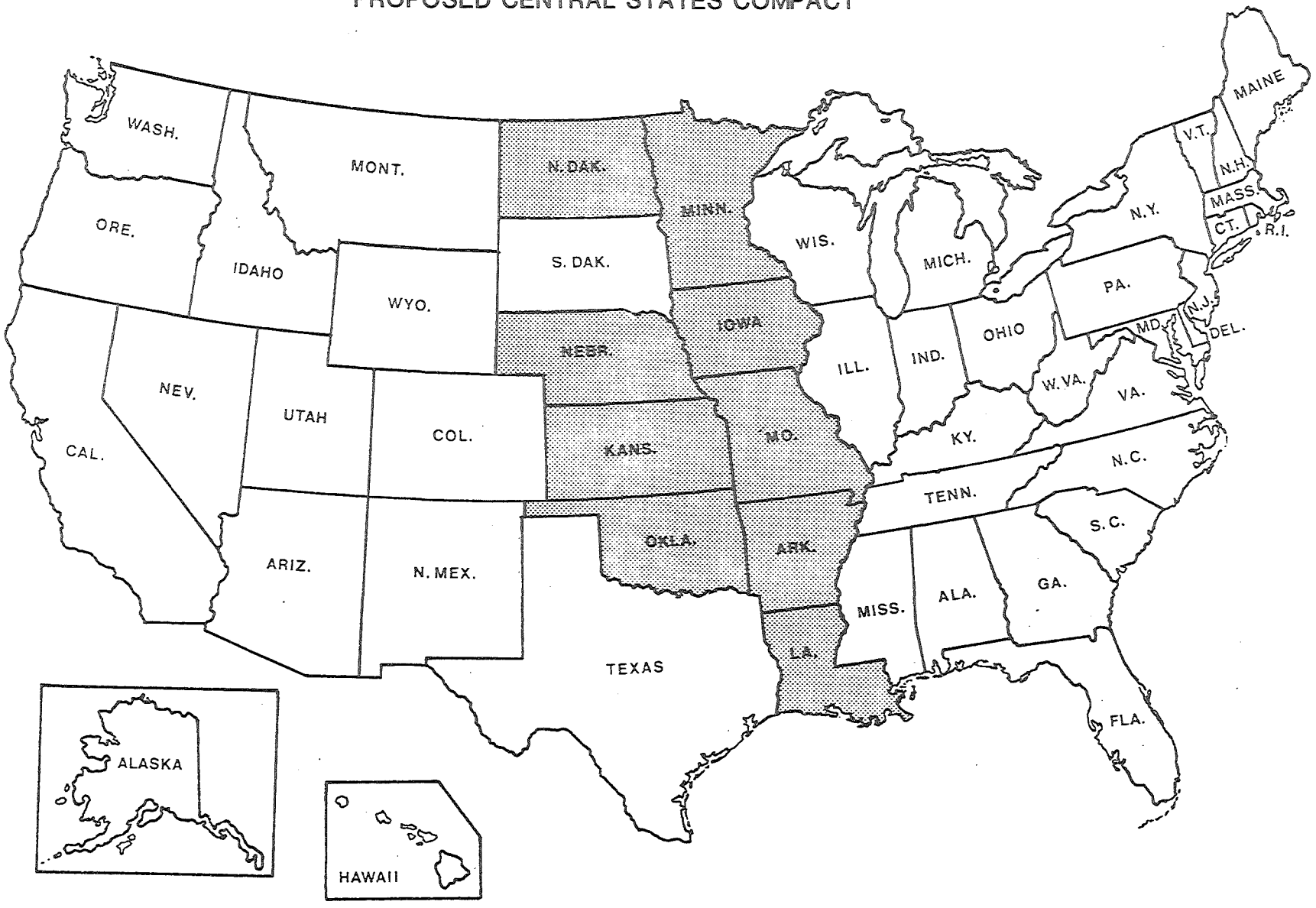


Figure 3.8

PROPOSED MIDWEST STATES COMPACT

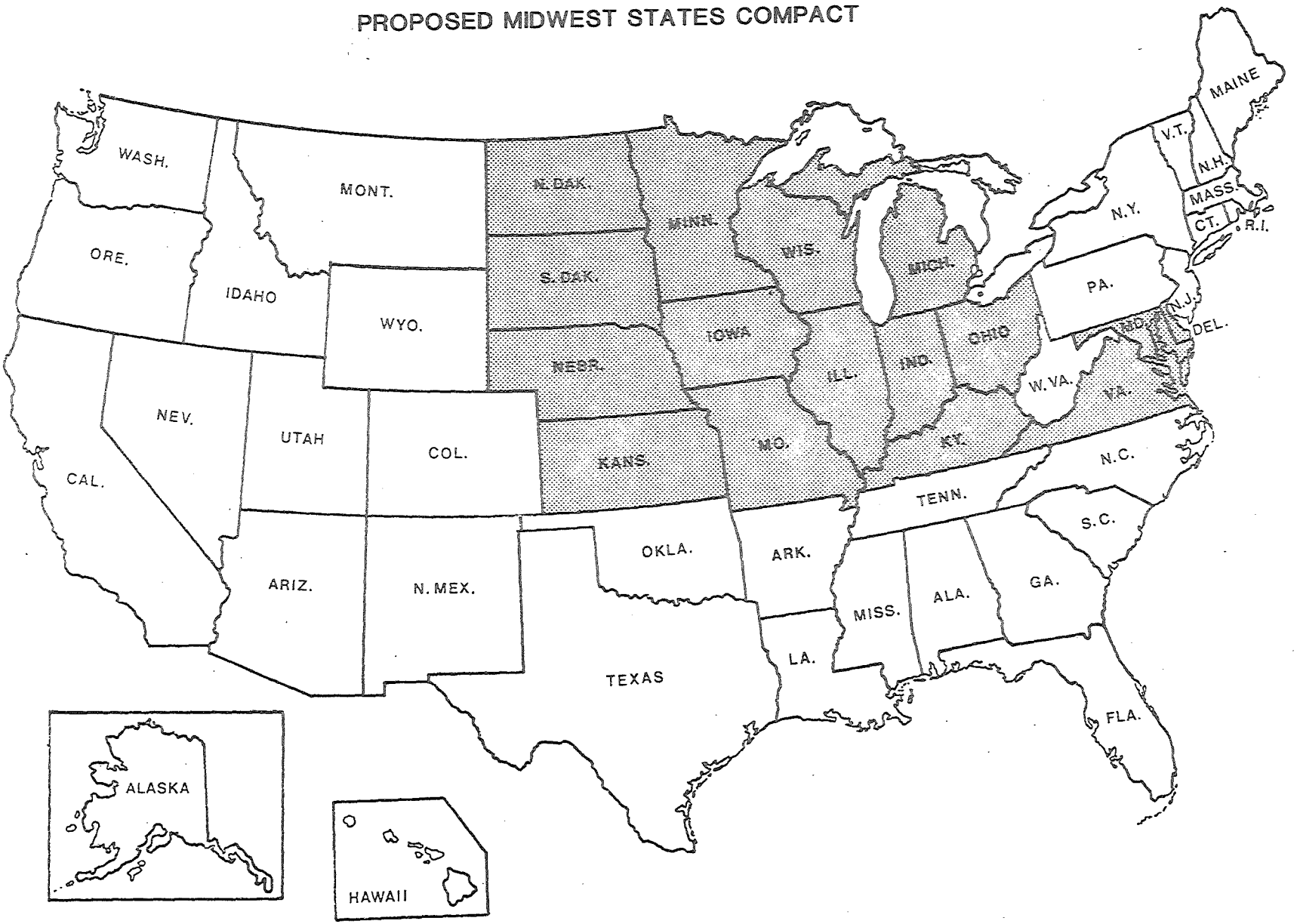


Figure 3.9

STATUS OF INTERSTATE COMPACTS

Compact Group	Eligible Party State	Action Taken
I. Northwest Compact	There are eight eligible party states.	Six states have adopted or are actively considering the adoption of the compact. Two states have not taken any action thus far.
	1. Alaska	1. No Action.
	2. Hawaii	2. Before the Legislature for approval.
	3. Idaho	3. Adopted the compact.
	4. Montana	4. The Governor, through executive order, has endorsed the compact. Legislative approval expected during next session.
	5. Oregon	5. Adopted the compact.
	6. Utah*	6. Adopted the compact.
	7. Washington	7. Adopted the compact.
	8. Wyoming*	8. No action taken.
II. Southern States Compact	There are seven eligible party states.	All but one state has adopted or is actively considering the adoption of the compact.
	1. Alabama	1. Adopted the compact.
	2. Florida	2. Adopted the compact.
	3. Georgia	3. Adopted the compact.

*Denotes states that are eligible in more than one compact.

Compact Group	Eligible Party State	Action Taken
	4. Mississippi	4. Adopted the compact.
	5. North Carolina*	5. No action. Legislature does not meet until June, 1982.
	6. South Carolina	6. Before the Legislature for approval.
	7. Tennessee	7. Adopted the compact.
	8. Virginia* (not listed as an eligible state in the compact)	8. Legislation has been passed in support of the Southern States Compact. The Virginia Legislature has also adopted the Mid-Atlantic Compact. That compacts are awaiting the Governor's signature.
III. Rocky Mntn. States Compact	There are six eligible party states.	Only one state has adopted the compact.
	1. Arizona	1. No action.
	2. Colorado	2. Adopted the compact.
	3. New Mexico	3. Introduced the compact for approval. No action taken by 1982 Legislature.
	4. Nevada	4. No action.
	5. Utah*	5. Adopted the Northwest Compact.
	6. Wyoming*	6. No action.

*Denotes states that are eligible in more than one compact.

Compact Group	Eligible Party State	Action Taken
IV. Northwestern States Compact	There are nine eligible party states. (Delaware and Maryland have petitioned to become eligible states)	The compact has just been drafted. No state has introduced the compact for adoption at this time.
	1. Connecticut	1. No action.
	2. Maine	2. No action.
	3. Massachusetts	3. No action.
	4. New Hampshire	4. No action.
	5. New Jersey	5. No action.
	6. New York	6. No action.
	7. Pennsylvania	7. No action.
	8. Rhode Island	8. No action.
	9. Vermont	9. No action.
	10. Delaware**	10. No action.
	11. Ohio**	11. No action.
	12. West Virginia**	12. No action.
	13. Maryland**	13. Executive work group is examining the Northwest, Mid-Atlantic and Midwest Compacts. The group is also exploring the possibility of entering the Southern States Compact. No action before the Legislature until Jan., 1983.

*Denotes states that are eligible in more than one compact.

**These states may be eligible for the Northwest Compact although they are not explicitly listed in the compact. This is due to the fact that the Northeast Compact permits any state contiguous to the final compact grouping of states to be considered as an eligible state.

Compact Group	Eligible Party State	Action Taken
V. Mid-Atlantic States Compact	There are six eligible party states and two U.S. Territories.	Only one state has adopted the compact.
	1. Delaware*	1. No action.
	2. Kentucky*	2. No action.
	3. Maryland*	3. Executive work group is examining four compact groups. No action anticipated before 1983.
	4. North Carolina*	4. No action; the Legislature does not meet until June, 1982.
	5. Virginia*	5. Legislature has adopted the Mid-Atlantic Compact. Virginia has also adopted the Southern States Compact, even though it is not listed as an eligible state in that compact.
	6. West Virginia	6. No action.
	7. Washington, D.C.	7. No action.
	8. Puerto Rico	8. Draft resolution in support of the compact.
	9. Virgin Islands	9. No action.
VI. Central States Compact	There are nine eligible party states.	Two states have adopted or supported the compact. Three states have submitted the compact for legislative approval. Five states have taken no action.
	1. Arkansas	1. No action.
	2. Iowa*	2. Considering the Central States Compact and Midwest Compact as "Study Bills."

*Denotes states that are eligible in more than one compact.

Compact Group	Eligible Party State	Action Taken
	3. Kansas*	3. Adopted the compact.
	4. Louisiana	4. Before the Legislature for adoption.
	5. Minnesota*	5. A Task Force and joint Legislative committee is studying the Central States and the Midwest States Compacts. No Legislative action expected until after Jan., 1983.
	6. Missouri*	6. Central States Compact and Midwest Compact are before Legislative Committees for study.
	7. Nebraska*	7. Legislative resolution adopted declaring the state will adopt the Central States Compact next session.
	8. North Dakota*	8. No action.
	9. Oklahoma	9. No action.
VII. Midwest States Compact	There are sixteen eligible party states.	No state has taken any formal action to adopt the compact. Five eligible states have adopted or are actively considering the adoption of some other compact.
	1. Delaware*	1. No action.
	2. Illinois	2. Has established a State Department of Nuclear Safety with responsibilies in siting, licensing and inspecting radioactive waste activities. The state has published rules covering site selection criteria in the Illinois State Register.

*Denotes states that are eligible in more than one compact.

Compact Group	Eligible Party State	Action Taken
	3. Indiana	3. Special Task Force has been established to review the Midwest Compact. No action expected until after Jan., 1983.
	4. Iowa*	4. Introduced the Central States Compact and Midwest Compact as study bills.
	5. Kansas*	5. Adopted the Central States Compact.
	6. Kentucky*	6. No action.
	7. Michigan	7. No action.
	8. Minnesota*	8. A Task Force and joint Legislative committee is studying the Central States and the Midwest States Compacts. No Legislative action expected until after Jan., 1983.
	9. Missouri*	9. Central States and Midwest State Compacts are in legislative study committees.
	10. Nebraska*	10. Adopted a resolution declaring the state would adopt the Central States Compact next session.
	11. North Dakota*	11. No action.
	12. Ohio	12. No action.
	13. South Dakota	13. No action.
	14. Wisconsin	14. No action.

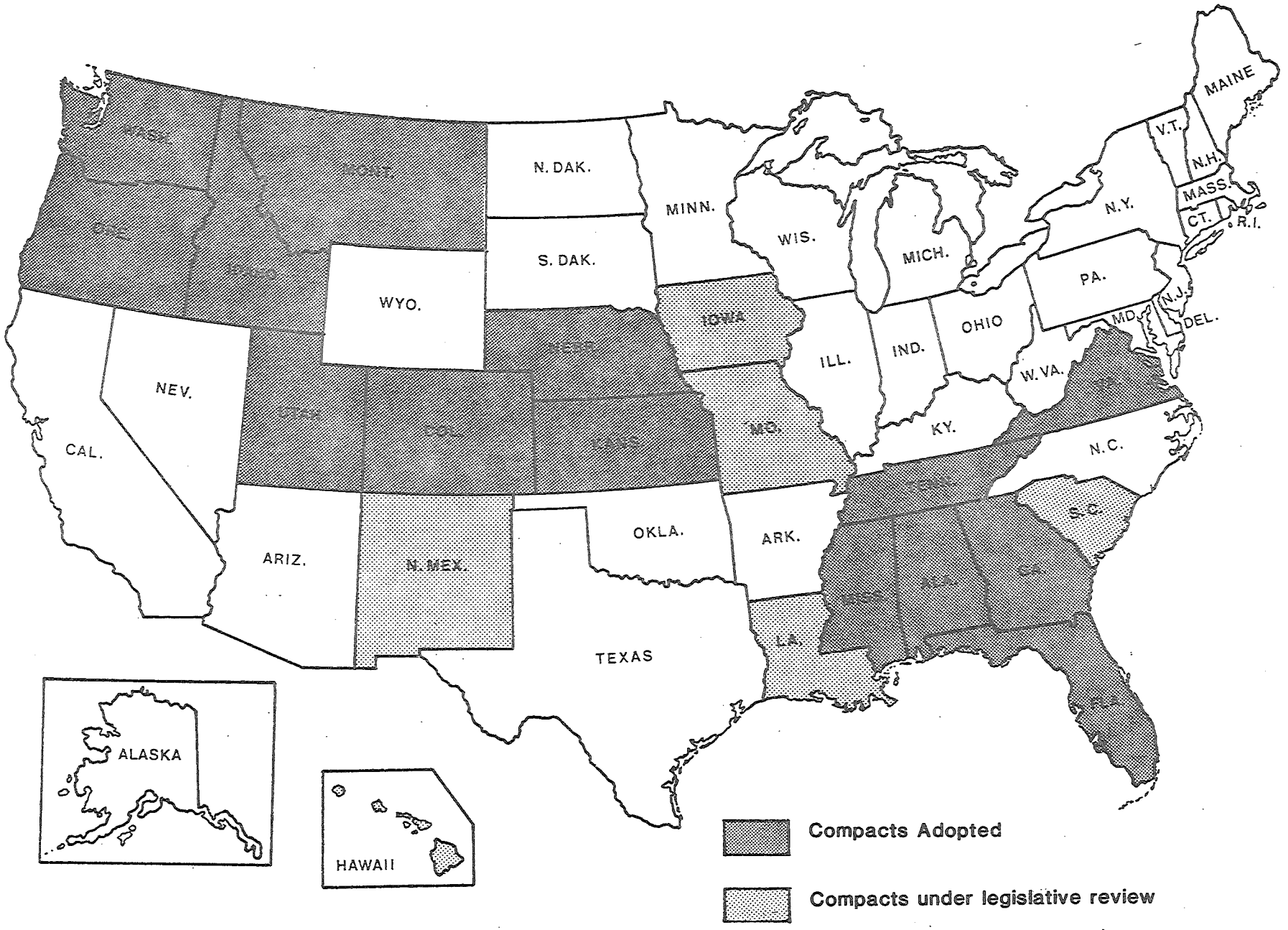
*Denotes states that are eligible in more than one compact.

Compact Group	Eligible Party State	Action Taken
	15. Virginia*	15. Legislature has adopted the Mid-Atlantic States and Southern States Compacts.
	16. Maryland*	16. An executive work group is examining the Northeast, Mid-Atlantic and Midwest Compacts. The group is also exploring the possibility of entering the Southern States Compact. No Legislative action expected until Jan., 1983.

*Denotes states that are eligible in more than one compact.

Figure 3.10

STATUS OF COMPACT ADOPTION PROCESS



negotiating meetings. By that time, many of the basic decisions concerning the conceptual nature of the Compact had already been made. Nevertheless, Minneosta's chief negotiator, Dr. George Pettersen, Commissioner of Health, related the concerns and ideas expressed by the Governor's Task Force on Low-Level Radioactive Waste. There was considerable resistance on the part of other participants to reopen for discussion areas in which general decisions had already been reached. Even though Minnesota may not have had an opportunity to significantly influence the compact's fundamental approach due to its late entry, the state did have an opportunity to express its views on compact conditions. It is anticipated that the group will convene again early in the summer of 1982 to provide an update of state legislative action and to discuss strategy for obtaining Congressional consent.

3.3.2 Midwest States Compact.

The Midwest States Compact group began meeting in 1980 with representatives from six states (Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin). The first and subsequent meetings were scheduled and chaired by William C. Taylor, Ph.D., Science Advisor to the Governor of the State of Michigan. Most of the thirteen meetings which followed were held in Chicago.

The Midwest meetings can be divided into two distinct phases with the first phase occurring between January and July of 1980. These meetings consisted of informal discussions surrounding the potential benefits of compacts. Later, an outline was developed which summarized the issues to be dealt with in an interstate low-level radioactive waste compact. Participation in these meetings was largely limited to the six states noted above. The states' representatives were, for the most part, directors of radiation safety or natural resources programs. Minnesota was represented in these discussions by Alice Dolezal, Chief, Section of Radiation Control, Minnesota Department of Health.

The second phase of the Midwest States Compact development began in June 1981. During the interim, Congress had passed the Low-Level Radioactive Waste Policy Act (P.L. 96-573) which specifically authorized states to form compacts. This fact resulted in a determined attitude to move ahead as rapidly as possible with the drafting of a compact document. Because numerous policy decisions needed to be made, it became apparent that the states' representatives would need the authority to negotiate on behalf of their respective states. Therefore, letters were sent to the Governor of each state requesting them to designate an official negotiator. At the same time, several additional states joined in the compact discussions. These states included Iowa, Kentucky, Missouri, Nebraska, North Dakota, South Dakota, and Kansas. Most Governors designated department heads or members of their personal staff as official negotiators. In accordance with Executive Order No. 81-10 issued in September 1981, George R. Pettersen, M.D., Commissioner of Health, was designated as Minnesota's lead official for purposes of negotiating compacts with other states.

Monthly meetings of the group were held between August, 1981 and April, 1982. A "steering committee" consisting of representatives of Illinois, Michigan, North Dakota, and Kentucky, was established to deal with technical matters.

The group proceeded in an orderly fashion by identifying and outlining the content of each compact article. Then, with the assistance of Raymond J. Peery (an attorney with the Southern States Energy Board), each article was drafted in preliminary form for discussion purposes. Subsequently, each article was thoroughly reviewed and the issues surrounding its provisions debated at length by the states' representatives. Amendments were proposed and substantive changes were made in each of the two working drafts prepared by Mr. Peery. When a general consensus could not be reached on an issue, a vote was taken and the majority position prevailed. Therefore, all participating states had an equal opportunity to influence the final product. In early 1982, the states of Virginia, Delaware and Maryland became involved with the Midwest States Compact. This brought the total number of eligible states to 16.

It was decided at the February 1982 meeting of the compact group, that each participating state would seek legislative and/or Task Force review and comment of the current draft compact document prior to convening again in July 1982 for purposes of making final revisions.

Chapter 4 of this report provides a detailed analysis of the conditions formally developed in the Central States and Midwest States Compact.

Chapter 4

CHAPTER 4

REVIEW OF MIDWEST AND CENTRAL STATES COMPACTS

Minnesota is an eligible state in two proposed Low-Level Radioactive Waste Compacts. The state will remain eligible to join the Midwest Compact until July 1, 1984 and the Central States Compact until January 1, 1984. The Governor's Task Force has reviewed and discussed the merits and limitations of the two compact documents. Figure 4-1 provides a general comparison between the various compact articles and provisions.

In most respects the two compact documents are essentially alike. Both compacts impose similar rights and obligations on its party members and outline a general process by which regional disposal facilities can be identified, developed, and managed. The basic difference between the two compact documents are in the way they address:

1. The responsibilities and authority granted an interstate commission.

2. The manner in which a regional disposal facility is to be identified and sited and the selection of a site operator.

3. The control exercised over the flow of waste within the compact.

4. The penalties imposed against party states for early withdrawal from the compact.

In addition to differences in compact conditions, there are differences between the two compact groups with respect to the number of potential party states and the volume of low-level radioactive waste generated. The following text provides a brief summary of the two compact documents. Following the summary is a detailed discussion of key compact provisions and an assessment of their implications for Minnesota.

4.1 BACKGROUND AND GENERAL OVERVIEW OF EACH COMPACT.

4.1.1 Central States Compact

The Central States Compact consists of nine central plains states whose economies are predominately agriculturally based. Figure 4-2 illustrates the geographic boundaries of the proposed Central States Compact. Presently there are no existing low-level radioactive waste disposal sites located within the compact region. The state of Kansas has received an application for a regional disposal site, but the Kansas State Legislature will not act on the site application until a regional low-level waste compact has been adopted. This proposed facility is located near Lyons, Kansas and anticipates the use of mined out salt caverns for waste disposal.

The volume of radioactive waste produced in the Central States group is approximately 137,000 cu. ft. per year.[1] Based upon the eligible party

[1] 1979 volumes as reported by U.S. Department of Energy in Low-Level Radioactive Waste Policy Act; Response to Public Law 96-573.

Table 4-1

SUMMARY COMPARISON OF INTERSTATE COMPACTS FOR LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT (MARCH 1982)

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
ARTICLE I. POLICY AND PURPOSE Purpose of the article: This is an introductory article establishing the policy and purposes of the compact.	It is the purpose of this compact to provide a framework for cooperative effort to: a. provide sufficient facilities for the proper management of low-level radioactive waste. b. protect the health and safety of the citizens of the region. c. limit the number of facilities used for disposal. d. encourage reductions of the amount of waste generated. e. distribute the costs, benefits and obligations of waste management. f. ensure the ecological and economic management of low-level radioactive wastes.	It is the purpose of this compact to provide a framework for cooperative effort to: a. provide a low-level radioactive waste site for the region. b. promote the health, safety and welfare of the citizens and environment of the region. c. limit the number of facilities needed. d. encourage the reduction of the generation of waste. e. distribute the costs, benefits and obligations of low-level radioactive waste management.	Differences: No major differences in stated policy or purpose. Implications: No major implications. (The Nuclear Regulatory Commission has raised the question as to whether or not an interstate compact can propose conditions that would go beyond the siting and development of a waste disposal facility. If NRC's concerns are upheld, the direction and policies of both compacts might have to be reworked.)
ARTICLE II. DEFINITIONS Purpose of the article: Because of the technical character of some terms, a definitions article is provided. Key terms used in the compact are identified and defined.	Twenty-two terms are defined.	Fifteen terms are defined.	Differences: There are no major differences in definitions. Implications: No major implications.
ARTICLE III. RIGHTS AND OBLIGATIONS Purpose of this article: This article lists the rights, obligations, and benefits that each party state has as a member of the compact.	V.* The compact outlines the following rights and obligations: a. All party states will have access to a regional disposal facility.	III.* The compact outlines the following rights and obligations: a. All party states will have access to a regional disposal facility.	a. Differences: None. Implications: This provision guarantees that the state will have unrestricted access to disposal facilities for low-level radioactive wastes. It eliminates the likelihood that the disposal of wastes will be disrupted by arbitrary actions by public or private bodies. If Minnesota becomes a host state,

*Articles III and V are in transposed positions in the two compacts.

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
			this provision means the state must accept for disposal, all of the wastes generated within the compact regions. For the Central States Compact group, that amounts to a waste volume of approximately 136,700 cubic feet. For the Midwest States Compact group, the volume that would have to be accepted for disposal is approximately 721,000 cubic feet.
	b. To the extent authorized by federal law, a selected host state will regulate, license and ensure the extended care of any regional facility located within its borders.	b. To the extent authorized by federal law, a selected host state will license and ensure the extended care of any regional facility located within its borders.	b. Differences: None. Implications: This condition in both compacts would require Minnesota, if selected as a host state, to make every effort possible to ensure that a regional disposal facility is sited and licensed. The Midwest States Compact has an "escape clause" (Art. IX-e) which would permit a potential host state to withdraw from the compact without penalty if it does so within 90 days of being designated. Important note--Licensing of a disposal facility can only be done by the NRC or a state with "agreement" status with the NRC. Minnesota is not an NRC agreement or limited agreement state. As such, the NRC would presently be the licensing agent in Minnesota.
	c. To the extent authorized by federal law, each party state has the right to enforce any applicable federal and/or state laws governing packaging and transportation of waste materials.	c. To the extent authorized by federal law, each party state is responsible for enforcing any applicable federal and state laws governing the packaging and transportation of waste materials. Each party state also agrees to adopt practices that will ensure that waste shipments originating within their borders and destined to a regional facility will conform to applicable packaging and transportation laws (emphasis added).	c. Differences: The Central States Compact places an added obligation on party states to establish some form of state packaging and transportation inspection/reporting system. Implications: The NRC and/or agreement states presently to enforce and inspect suspected violations of packaging or shipment laws. The Midwest States Compact condition would not impose any additional requirement on the state. The Central State's Compact requires party states to "adopt practices" that will ensure enforcement of packaging laws. The state could

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
			satisfy this compact requirement in a variety of ways. It could develop an administrative reporting system, improve its communications with the NRC or even become a limited agreement state with the NRC for transportation/packaging related issues.
	d. Disposal rates will be set by the site operator with approval by the host state. The host state must submit an annual financial audit of the operation of the regional facility.	d. Disposal rates will be set by the site operator with approval by the host state. The commission establishes general criteria for rate approval.	d. Differences: The Central States Commission establishes criteria for disposal rate approval. Implications: Under the Central States Compact each party state may have an opportunity to influence the rate structure via the criteria the commission establishes.
	e. The host state will establish a fee schedule to cover all costs related to regulating, decommissioning, and long-term care of the regional facility. The host state must submit an annual financial audit of the operation of the disposal facility to the Commission. The host state is responsible for ensuring proper decommissioning and long-term care.	e. The host state will establish a fee schedule to cover all costs related to regulating, decommissioning, and long-term care of the regional facility. If the fees have been reviewed and approved by the Commission and the revenues received are insufficient, all party states share in the added costs.	e. Differences: The principal difference between the two compacts is in the control that the Commission has over reviewing the "fees" levied by the host state. The Midwest States Compact uses a mandatory financial audit as its tool for review. The Central States Compact uses a "voluntary" review procedure. In addition, the Central States Compact includes a provision whereby extraordinary costs can be shared by all party states. It is unclear whether the Midwest Compact can effectively ask all party states to share in such costs of if the host state must assume these costs by itself. Implications: The Midwest States Compact approach of an audit provides greater assurances to non-host states that the fee system is fair and reasonable. In the Central States Compact, the host state has the option of submitting its fee schedule for commission review. It is important to note, however, that if a host state in the Central States does not have its fee system reviewed, any added costs not covered by the revenues from the fees are the responsibility of the host state. The undesirability for host states to assume all additional costs may be an effective tool for assuring adequate Commission review of the fees.

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
	f. After January 1, 1986 all wastes in the region must be disposed of at the regional facility. No wastes can be imported or exported without host state and commission	f. After January 1, 1986 all wastes in the region must be disposed of at the regional facility. No wastes can be imported or exported without host state and commission approval. In addition, it is unlawful, unless authorized by the Commission to transport waste from the site at which it is generated except to a regional facility.	f. Differences: Both compacts seek to control the import and export of wastes from the compact region. The Central States Compact, however, also seeks to control the movement of wastes once it leaves its point of generation. Implications: The NRC has suggested that the Federal Act does not authorize compact groups to prohibit the export of waste. If this is true, the Central States Compact group with a relatively small volume of wastes, is likely to experience a greater impact at its regional facilities if some of the wastes within the region are exported. A smaller volume might also give the compact an incentive to import wastes.
ARTICLE IV.* THE COMMISSION Purpose of the article: This article identifies the composition, rights, responsibilities and funding structure for an interstate commission.	III.* a. The commission will be composed of one voting member from each party state.	IV.* a. The commission will be composed of one voting member from each party state.	a. Differences: None. Implications: Both compacts propose to have one commissioner from each state. This is not expected to be a full-time position.
	b. No commission action will be binding unless a majority of the members cast their vote in the affirmative.	b. No commission action will be binding unless a majority of the members cast their vote in the affirmative.	b. Differences: None. Implications: No major implications.
	c. The commission will adopt and publish by-laws.	c. The commission will adopt and publish by-laws.	c. Differences: None. Implications: No major implications.
	d. The commission will meet at least once a year and at the call of the chair and/or any party state.	d. The commission will meet at least once a year and at the call of the chair, the host state, or upon petition by a majority of the party states.	d. Differences: The Midwest States Compact allows for any party state to call a meeting of the Commission. In the Central States Compact only the host state and chairman can individually call a commission meeting. Implications: The Midwest States Compact provides every party state with the opportunity to assemble the commission to address issues it might feel are important. This Midwest provision could be both an advantage and a disadvantage.

*Articles III and IV are in transposed positions in the two compacts.

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
	e. The commission can establish advisory committees as it sees fit.	e. The commission can establish advisory committees as it sees fit.	e.Differences: None. Implications: No major implications.
	f. The commission can employ a limited staff. The staff will serve at the pleasure of the commission.	f. The commission can employ a limited staff. The staff will serve at the pleasure of the commission.	f.Differences: None. Implications: No major implications.
	g. The commission will be funded as follows: 1. On becoming a party state each state each state will contribute $50,000 for the operation of the commission. 2. The host state will collect sufficient fees from disposers to cover the commission's budget.	g. The commission will be funded as follows: 1. On becoming a party state each state will contribute up to $25,000 per year for the operation of the commission. 2. The host state will collect sufficient fees from disposers to cover the commission's budget.	g.Differences: Both compacts recognize that funds will be needed to support the Commission before a site is operational. The Midwest group proposes a one-time "initiation" fee ($50,000). The Central group has a yearly assessment (up to $25,000). Implications: Assuming revenues from a site to cover the commission's costs will not be available until 1986, Minnesota would have to provide the following commission support funds: Midwest-$50,000; Central-up to $75,000. Because the Central States Compact group does not anticipate the commission undertaking major studies, the Central States Compact figure could be less than $75,000. In all likelihood the costs will be similar. Important note--these costs will not be reimbursed by disposal fees. The state could, however, obtain these funds through special surcharges on waste generators.
	h. The commission is not responsible for costs related to operation, siting, stabilization or closure of a regional facility.	h. The commission is not liable for costs related to the operation, siting, stabilization or closure of a regional facility.	h.Differences: None. Implications: These costs are a responsibility of the selected host state. In the Central States Compact should these costs exceed the financial reserves established for stabilization or closure all party states will share in the added cost, provided the commission has reviewed and approved a host states fee schedule.
	i. Commission duties and powers. 1. The commission can receive new members.	i. Commission duties and powers. 1. The commission can receive new members.	i.Commission duties and powers. Differences: None. Implications: The Midwest Compact can place major demands on new members such as requiring the state to automatically become a host state. (See Art. VI-I)

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
	2. Prepare an annual report.	2. Prepare an annual report.	Differences: None. Implications: No major implications.
	3. Hear and negotiate disputes among party states on matters related to the compact.	3. Hear and negotiate disputes among party states on matters related to the compact.	Differences: None. Implications: No major implications.
	4. The commission can require party states to submit data and information necessary to implement the commission's responsibilities.	4. The commission can require party states to submit data and information necessary to implement the commission's responsibilities.	Differences: None. Implications: The information likely to be requested is on waste generation and projections for each state. This could be managed as periodic updates of the Health Department's report.
	5. Develop procedures for determining the type and number of facilities for the region. In addition the commission, after developing criteria, will identify a host state.	5. Approve the development and operation of a regional facility. The commission will approve from sites submitted to it, a disposal facility and host state. The Central States Commission also has the responsibility of approving a site operator.	Differences: Both compacts have the Commission giving final approval of host state. The Central States also approves an operator. In the Midwest State Compact the operator is approved by the host state. See Article V of this chart for discussion of the differences. Implications: See Article V of this chart.
	6. The commission can revoke or suspend party state's membership.	6. The commission can revoke or suspend party state's membership.	Differences: None. Implications: If Minnesota fails to fulfill its obligations under the compact it can be suspended or expelled. This action would jeopardize the state's ability to dispose of the low-level waste generated within the state.
	7. The commission will develop and adopt a budget.	7. The commission will develop and adopt a budget.	Differences: None. Implications: Under both compacts, the states have an opportunity to review and comment on the budget.
	8. The commission may appear as an intervenor in legal proceedings, rate setting hearings or other such matters that relate to the operation or jurisdiction of the commission.	8. The commission may appear as an intervenor in legal proceedings, rate setting hearings or other such matters that relate to the operation or jurisdiction of the commission.	Differences: None. Implications: No major implications.

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
	9. The commission can negotiate for the import or export of wastes from the region. Such action would require a 3/4 majority vote plus an affirmative vote by the host state whose facility might be affected.	9. The commission can negotiate for the import or export of wastes from the region. Such action would require a majority vote plus an affirmative vote by the host state whose facility might be affected.	9. Differences: Basically none. Implications: The question of ability to regulate the export of waste has been raised by the NRC. See discussion of implications under Article III-f of this chart.
	10. The commission will conduct public hearings and gather testimony when identifying a host state.	10. N.A.	10. Differences: Only the Midwest Compact has this provision. Implications: Prior to being designated as a host state, that state may request a public hearing. The compact does not indicate what form or purpose the hearing is to serve.
	11. The commission can rule on the appropriateness of emergency closure of a regional facility.	11. N.A.	11. Differences: Only the Midwest Compact has this provision. Implications: The impact of giving the Commission review power over emergency closure of a site depends upon whether Minnesota is a host state or not. If Minnesota is a host state, this compact provision requires the host state to substantiate the reasons for an emergency closure.

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
ARTICLE V. DEVELOPMENT AND OPERATION OF FACILITIES. Purpose of the article: This article is designed to establish the procedures relating to the site selection, development, and operation of regional facilities.	The siting, development and processing of a regional site would occur as follows: a. Party states could volunteer to become a host state. b. If there is no volunteer, the commission will designate a host state. c. The designated host state is responsible for identifying possible facility locations within its borders. d. The host state is responsible for ensuring that the site is properly closed and decommissioned when it reaches its disposal capacity limits (usually 20 years or more). e. A party state may be designated as a host state by the commission while a regional facility is still in operation if the commission feels there is a need for additional facilities. f. If a host state wishes to close a facility it must notify the commission of its intentions at least five years prior to closure. (Emergency closures are exempted).	The siting, development and processing of a regional site would occur as follows: a. Party states could volunteer to become a host state. b. If there is no volunteer, the commission will seek applicants for the development and operation of regional facilities. c. The commission will review all applicants and make a preliminary selection of the proposal most likely to meet the region's needs. d. The commission then notifies each party state of the preliminary selection. e. The commission authorizes the selected operator to pursue development, licensure and operation of the facility as proposed.	Differences: The major difference in the compact's siting process is the emphasis that is placed on the commission and private site operators. The Central State Compact has the private sector taking the initiative in site selection. The Midwest States Compact uses the Mgmt. Plan to identify a host state. The host state selects a site. The Midwest Compact contains some preliminary thinking on siting a second facility if it is necessary. The Central States Compact does not directly address this issue. Implications: Under the siting provisions in the Central States Compact, there are no assurances that the "best" site in the region will be sited or even identified. The Central State Commission is restricted to reviewing only those proposals for sites that are submitted by qualified site operators. All proposals must meet, at a minimum, NRC's site selection criteria. The Commission will select the preferred operator when it designates the host state. As such the host state does not directly control the selection of who will be operating the facility. The biggest advantage to the Central States siting process is that an operator is selected before a final site is identified. That operator can, therefore, be required to finance all siting, licensing and review costs of the host state. The biggest disadvantage is the formal lack of initial involvement by the potential host state in decisions related to approving an operator and preliminary approval of host state status. It should be noted that the State of Kansas is considering an application for a disposal site. Under the Midwest States Compact, the Commission prepares a regional waste management plan before a host state is identified. The plan assumes the leadership

role in identifying a host state and a disposal facility. The potential host state has a greater opportunity for control over the selection of an operator and final disposal site. In addition, the residents if potential host states can participate in public hearings prior to the state being designated if a hearing is requested by the host state.

The biggest disadvantage to the Midwest States siting process is time. In addition the non-penalty escape clause potentially weakens the ability of this compact to designate a facility for regional use. The biggest advantage of the Midwest State's process is the direct role that potential host states can play in ultimately approving a regional facility and an operator.

Minnesota presently does not have a siting process established for low-level radioactive waste disposal facilities. In addition, Minnesota does not have agreement state status with the Nuclear Regulatory Commission. This means that if Minnesota is selected as a host state, the Nuclear Regulatory Commission would site and license the facility. The mechanics of a siting process will largely depend upon which Compact is adopted. If Minnesota is in the Central States group, the process would be reactive, that is, it would react to a proposal submitted by an applicant. Under such a process the burden of proving that alternative sites are preferable to the proposed site is on competing site operators and the potential host states. The costs associated with siting and project review could be paid for by the applicant through special application and siting fees. If Minnesota joins the Midwest States Compact, the siting process would be more pro-active, in that the state would be identifying the likely candidate sites

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
			and operators for a facility. The initial siting costs would most likely be the responsibility of the state although a host state could pre-select and have that operator finance the siting and licensing process.
ARTICLE VI. OTHER LAWS AND REGULATIONS. Purpose of the articles: This article is included to ensure that state laws do not conflict with compact provisions.	a. Nothing in the compact: 1. Prevents the application of laws which are not otherwise inconsistent with the compact. 2. Makes unlawful the operation of an existing and properly licensed facility. 3. Prohibits or restricts the legal management of waste on the site where it is generated. 4. Affects any pending judicial proceeding. 5. Alter the relationship or responsibilities of party state government. 6. Affect the generation or management of waste generated by the federal government.	a. Nothing in the compact: 1. Prevents the application of laws which are not otherwise inconsistent with the compact. 2. Makes unlawful the operation of an existing and properly licensed facility. 3. Prohibits or restricts the legal management of waste on the site where it is generated. 4. Affects any pending judicial proceeding. 5. Alter the relationship or responsibilities of party state government. 6. Affect the generation or management of waste generated by the federal government.	a. Differences: None Implications: No major implications.
	b. For purposes of this compact, all state laws or parts of laws in conflict with this compact are hereby declared null and void.	b. For purposes of this compact, all state laws or parts of laws in conflict with this compact are hereby declared null and void.	b. Differences: None Implications: Both compacts will supersede state laws. Laws, or portions of laws, that conflict with the compact are not valid as they relate to actions covered by the compact. The existing state laws may or may not be amended or repealed.
	c. No laws shall be applied so as to restrict or make more inconvenient access to regional facilities by the generator of another party state.	c. No laws shall be applied so as to restrict or make more inconvenient access to regional facilities by the generator of another party state.	c. Differences: None Implications: This compact provision ensures that Minnesota will be treated in an equal manner with all party states. This also means that if Minnesota is a host state, it cannot place special taxes or conditions on wastes generated outside the state.

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
ARTICLE VII. ELIGIBLE PARTIES, WITHDRAWAL, REVOCATION, ENTRY INTO FORCE, TERMINATION. Purpose of the article: To identify eligible parties and establish withdrawal provisions.	a. 16 states are listed as initially being eligible.	a. 9 states are listed as initially being eligible.	a. Differences: The states listed as being eligible are different. Some states, like Minnesota, are listed in both compacts. Implications: The impact of which states ultimately become members of the compact is difficult to assess. In the Central States group, Minnesota is presently the largest generator among the eligible states. If all of the eligible states in the Central States group join this compact, Minnesota will produce approximately 37% of the regions waste. Future growth of volume in other states may surpass Minnesota's volume in the future. The Midwest States group includes Maryland, Virginia and Delaware. These states broaden the geographic range of the compact region and could result in higher transportation costs if sites near the eastern edge of the region are developed. The State of Illinois has indicated some interest in going it alone.
	b. Any state may petition for eligibility and become so upon the majority vote of the commission, and approval of the host state. In addition, the commission may impose special eligibility requirements on states not presently eligible.	b. Any state may petition for eligibility and become so upon the unanimous vote of the commission.	b. Differences: The Central States Compact requires unanimous approval of the Commission to accept new members. The Midwest States Compact suggests that the requirements new party states may be subjected to include an eligibility fee or automatic designation as a host state. Implications: Both compacts permit the addition of new states to the compact. If Minnesota does not join either compact now, there is a possibility it could join later. Minnesota's future eligibility, however, is not assured. In addition, the compact association may impose a penalty, such as automatic host state designation on late joiners.

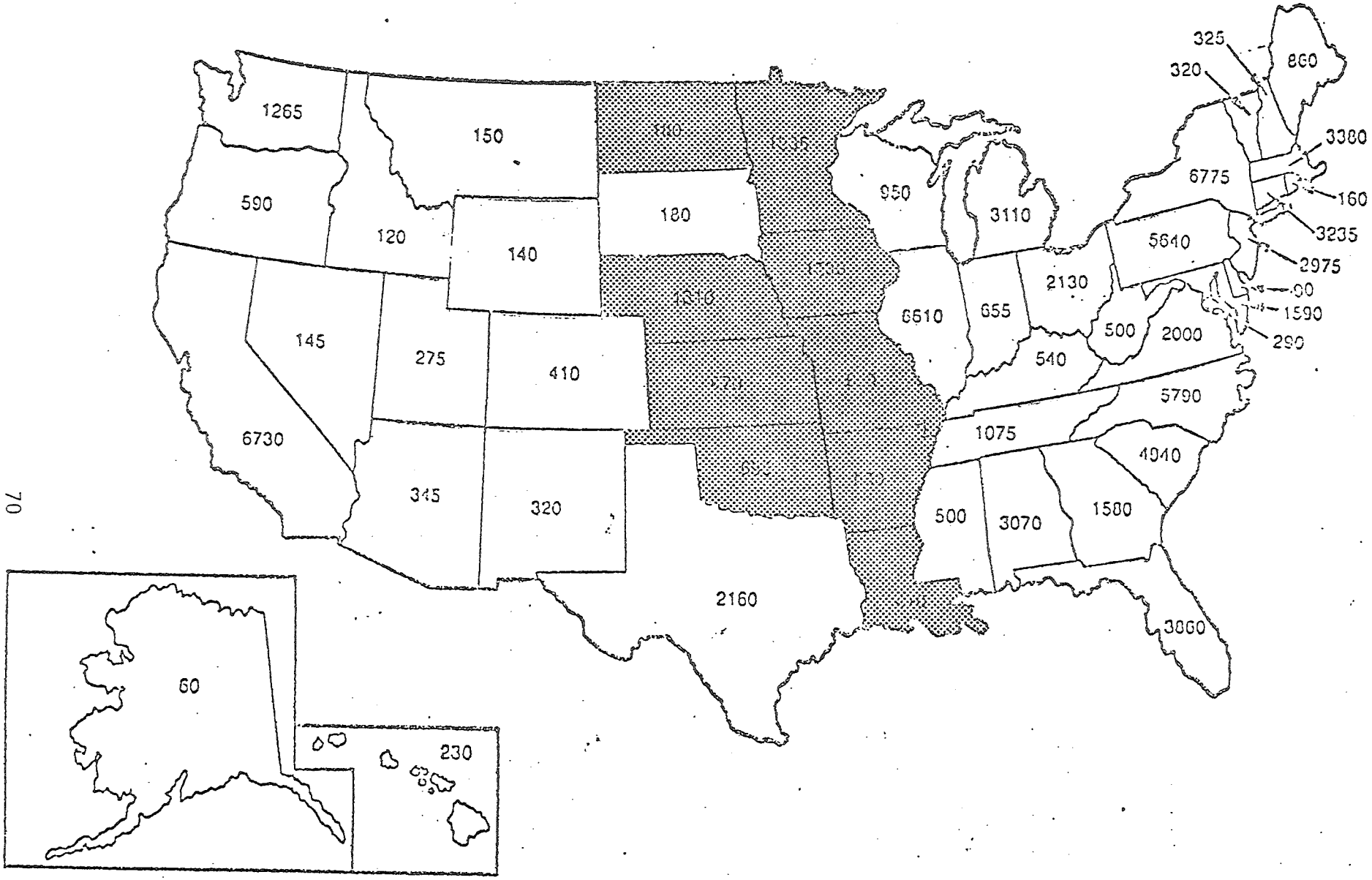
ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
	c. Any party state may withdraw from the compact. Withdrawal requires a five year notice. Withdrawal does not affect any liability already incurred. A host state that withdraws from the compact within 90 days of designation as a host state, may do so without penalty.	c. Any party state may withdraw from the compact. Withdrawal requires a five year notice. Withdrawal does not affect any liability already incurred.	c. Differences: The Midwest States Compact provides a host state the opportunity to withdraw from the compact without penalty. Implications: Both compacts offer states the opportunity to withdraw if proper notice is provided. The Midwest States Compact gives a host state up to 90 days to withdraw from the compact after being designated, without experiencing a penalty. This provision substantially weakens the authority of the Commission with regards to ensuring that a regional facility will be provided as planned.
	d. A party state which fails to comply with the compact terms or fulfill its obligations, can have its membership suspended or revoked.	d. A party state which fails to comply with the compact terms or fulfill its obligations, can have its membership suspended or revoked. The commission may require a state whose membership is revoked to compensate the host state for fees lost for a 5 year period.	d. Differences: The Central State Compact spells out some financial penalties to be applied to a revoked member. The Midwest Compact provides for the Commission or party states to seek financial penalties if they so choose. Implications: The Central States Compact makes it the responsibility of a revoked member to financially compensate other party states for any revenues lost as a result of the revoked membership. The Midwest States Compact leaves the issue up to individual states to seek legal action if they desire to do so.
	e. The compact becomes effective after enactment by at least 3 eligible states and after consent by Congress.	e. The compact becomes effective after enactment by at least 3 eligible states and after consent by Congress.	e. Differences: None Implications: No major implications.
	f. The compact is terminated when all party states have withdrawn.	f. The compact is terminated when all party states have withdrawn.	f. Differences: None Implications: No major implications.

ARTICLE TITLE	MIDWEST STATES COMPACT	CENTRAL STATES COMPACT	MAJOR DIFFERENCES AND IMPLICATIONS FOR MINNESOTA
ARTICLE VIII.* SEVERABILITY AND CONSTRUCTION. Purpose of the article: This is a standard legal provision.	VIII.* Portions of the compact can be severed through legal action and still not affect the validity of the compact.	IX.* Portions of the compact can be severed through legal action without affecting the overall validity of the compact.	Differences: The Midwest Compact contains a provision for applying a financial penalty to a host state which withdraw from the compact prior to fulfilling its obligations. The Central State compact has no such explicit penalty.
ARTICLE IX.* PENALTIES. Purpose of the article: This article outlines general penalty provisions.	IX.* Each party state will prescribe and enforce penalties against compact violations.	VIII.* Each party state will prescribe and enforce penalties against compact violations.	Implications: Minnesota's activities in the compact will be monitored and the state will experience penalties if it does not fulfill its responsibilities.

*Articles VIII and IX are in transposed positions in the two compacts.

igure 4.2

CENTRAL COMPACT STATES



Quantities of commercial low-level wastes generated in each state in 1978 and buried at commercial disposal sites. (Volumes in cubic meters.)

Figure 4.3

CENTRAL STATES COMPACT
1979 WASTE VOLUMES

Eligible Party States	1979 Waste Volume in Cu. Ft.	% of Total Compact Waste
Arkansas	9,400	7.1
Iowa	33,900	25.6
Kansas	400	0.3
Louisiana	700	0.5
Minnesota	47,300	35.7
Missouri	11,600	8.5
Nebraska	28,300	21.4
North Dakota	100	0.1
Oklahoma	700	0.5
Total	132,400	100

Source: A Legislator's Guide to Low-Level Radioactive Waste Management, National Conference of State Legislatures, 1981.

states in the compact, a significant increase in the region's waste volume is not anticipated. The largest waste producers in this compact association are Minnesota, Iowa and Nebraska. Together, these three states comprise over 80% of the region's generated waste. Figure 4.3 lists the 1979 volumes generated in each party state and the percent of the total regional volume that each state produces.

The rate charged to a user of a regional disposal facility is dependent upon the volume of waste processed, the type of disposal method used, and miscellaneous administrative costs. Assuming all of the eligible party states join the Central States Compact and send their wastes to the regional facility, the estimated cost of disposal may range from $10-$39/cu. foot.

Because the amount of volume handled at a regional facility influences the disposal rates and overall economic vitality of a disposal facility, the Central States Compact contains provisions that are designed to give the Commission significant control over the management and movement of the waste once it's generated. The relatively low volume of wastes generated within the Central States region could have implications on future efforts toward off-site volume reduction, long-term storage for decay, and waste incineration concepts. The low volume figure may also serve as an incentive for the compact group to import waste from non-compact states.

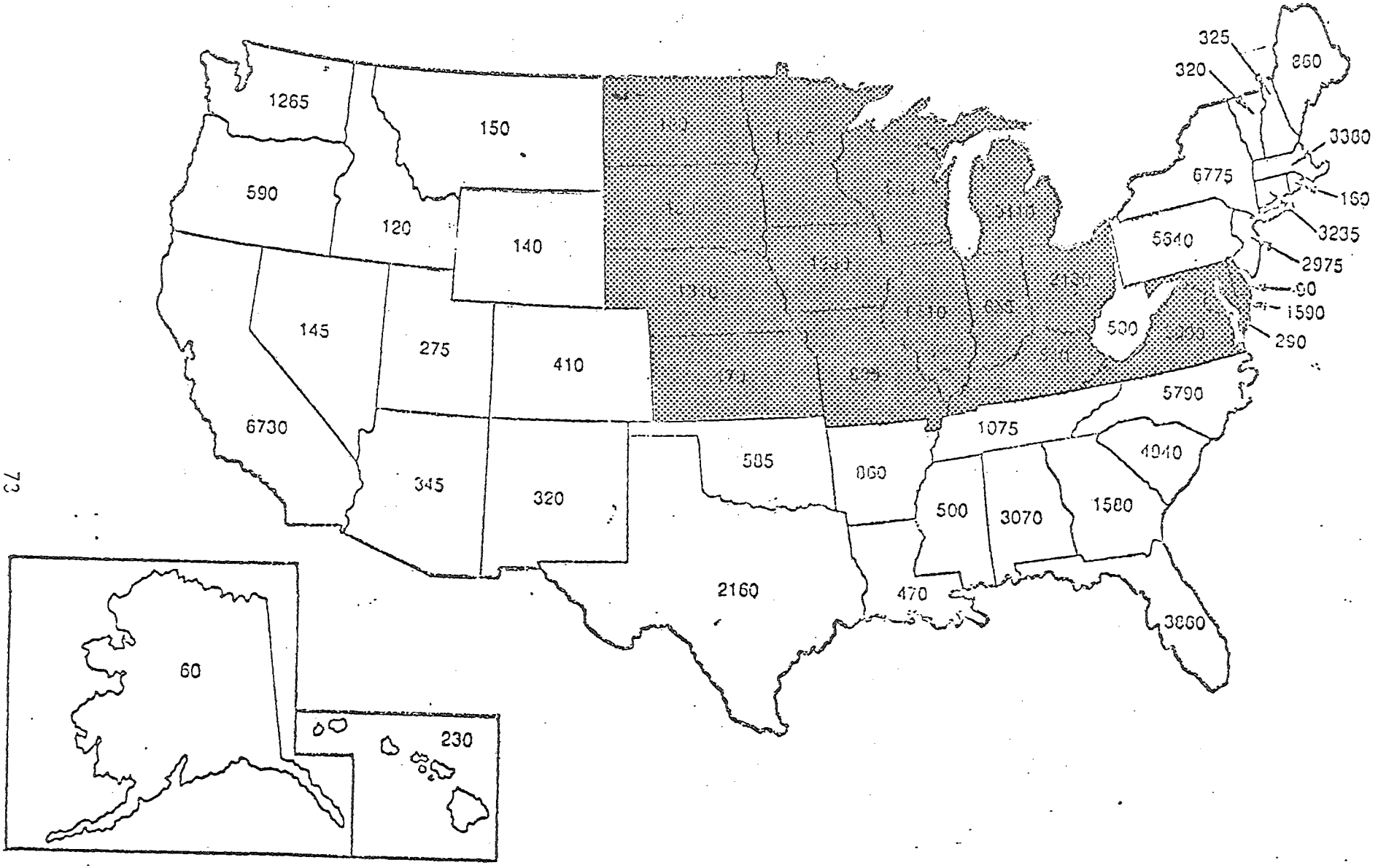
The compact document prepared by the Central States negotiators is a relatively final document. The Central States group does not anticipate any major changes in compact language or conditions. In fact, the States of Kansas, Nebraska, Iowa, Missouri and Louisiana have introduced legislation to review and adopt the compact documents in their respective legislatures. In Kansas the compact has been adopted and in Nebraska a legislative resolution has been passed supporting the adoption of the Central States Compact. Formal action in the other compact states is not expected until after January 1983.

4.1.2 Midwest State Compact

The proposed Midwest State Compact has been prepared by a group of 16 states located in the upper midwest and central Atlantic portion of the United States. Figure 4.4 illustrates the geographic boundaries of the proposed Midwest States Compact which includes 16 eligible states.

Presently there are no operating regional disposal sites or proposed sites within the Midwest Compact region. The States of Illinois and Kentucky have hosted regional low-level radioactive waste disposal sites in the past (Sheffield, Illinois; Maxey Flats, Kentucky); however, both sites are closed. Because there are no existing or proposed sites, the Midwest Compact suggests the establishment of a Commission with a relatively strong role in designating a potential host state. The Compact requires that a regional management plan will be prepared to provide guidance for the selection of a host state.

Figure 4.4
MIDWEST COMPACT STATES



Quantities of commercial low-level wastes generated in each state in 1978 and buried at commercial disposal sites. (Volumes in cubic meters.)

Figure 4.5

MIDWEST STATES COMPACT
1979 WASTE VOLUMES

Eligible Party States	1979 Waste Volume in Cu. Ft.	% of Total Compact Waste
Delaware*	4,200	0.6
Illinois	238,600	33.3
Indiana	1,000	0.2
Iowa	33,900	4.7
Kansas	400	0.1
Kentucky	6,800	0.9
Maryland*	34,500	4.8
Michigan	75,900	10.6
Minnesota	47,300	6.6
Missouri	11,600	1.6
Nebraska	28,300	3.9
North Dakota	100	0.1
Ohio	67,000	9.3
South Dakota	35	less than 0.1
Virginia*	149,300	20.8
Wisconsin	17,200	2.4
Total	716,335	100

*These states also comprise the major generators in the proposed Mid-Atlantic Compact. The State of Virginia has actually adopted the Mid-Atlantic Compact.

Source: A Legislator's Guide to Low-Level Radioactive Waste Management, National Conference of State Legislatures, 1981.

The annual volume of radioactive waste produced in the Midwest States group is approximately 721,000 cu. ft.[2] The largest producers in the association are Illinois, Virginia and Ohio. Figure 4.5 lists the present volume of waste generated by each eligible state in the proposed Midwest Compact.

The disposal rate charged to a user of a regional disposal facility is dependent upon the volume of waste processed, the type of disposal method used, and miscellaneous administrative costs. With the relatively large volume of wastes generated within the Midwest Compact region, it is conceivable that more than one waste management facility might be developed. Assuming all the eligible party states join the Midwest Compact and send their wastes to one central regional facility, the cost of disposal is estimated to range from $12.00/cu. ft. to $18.00/cu. ft.[3]

States that are potential members of the Midwest Compact have been asked to review the negotiators final draft of a compact by means of "dummy or study" bills, special legislative study committees, task forces, etc. The Midwest group will meet again in the summer of 1982. At that time, major problems identified with existing compact language will be discussed. In addition, it is anticipated that the draft management plan will be prepared by that time. The Midwest Compact, therefore, is still subject to modification.

4.2 ASSESSMENT OF COMPACT CONDITIONS AND THEIR IMPLICATIONS FOR MINNESOTA

The Midwest and Central States Compacts contain many similarities. The following review identifies the key provisions of the two compacts and possible implications of those condition for Minnesota. (A summary, Article by Article, comparison is listed in Figure 4.1)

4.2.1 POLICY AND PURPOSE PROVISIONS (Central State Compact Article I; Midwest Compact Article I).

The articles of the two compacts that outline policies and purpose serve to establish the overall compact framework for action. In essence, the policy and purpose provisions of the two compacts are the same. Both compact documents promote the concept of establishing an interstate low-level radioactive waste compact as the tool for protecting the health, safety and welfare of the citizens of the region; protecting the environmental quality of the region; limiting the number of disposal facilities necessary to manage the region's wastes; reduce the generation and volume of wastes; and equitably distribute the costs, benefits and obligations of regional waste management.

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[2]1979 volumes as reported in the U.S. Department of Energy's Low-Level Radioactive Waste Policy Act; Response to Public Law 96-573.

[3]Cost could be higher if some of the larger generating states such as Virginia and Illinois decide not to joint the compact.

Implications for Minnesota: The Policy and Purpose sections of the two compacts do not present major policy implications for Minnesota.[4]

4.2.2 DEFINITION OF TERMS (Central States Article II; Midwest States Article II).

Because of the technical character of the compacts, key words and phrases are identified and defined. Both compacts have similar definition sections.

Implications for Minnesota: There are no major implications.

4.2.3 RIGHTS AND OBLIGATIONS (Rights and obligations are listed throughout the compacts, however, most are articulated in Article III of the Central States Compact and Article V of the Midwest States Compact).

1. Right of access to regional disposal facilities. (Central States Compact Article III-a; Midwest States Compact V-b). Both the Central States and Midwest States Compacts list the right of access as the basic right of every party state. This means that every state in a compact can have all of the low-level radioactive waste generated within its borders properly disposed of at a regional disposal facility. Access to a disposal facility by a generator within a party state is limited only if the generator violates applicable federal/state laws or regulations related to low-level radioactive waste transportation, packaging and/or management.

   Implications for Minnesota: The right of access is an important provision for Minnesota and its low-level radioactive waste generators. This provision in both compacts guarantees that the state will have access to a regional disposal facility. If Minnesota becomes a host state, this compact provision means that the state must accept for disposal the low-level radioactive wastes generated within all party states. If selected as a host state, Minnesota cannot impose special restrictions that would make access to a regional facility more difficult or costly for any member state. For the Central States Compact group, the average annual volume of waste a host state might expect to receive is approximately 136,700 cu. ft. For the Midwest States Compact group, the average annual volume of waste a host state might expect to receive is approximately 721,000 cu. ft.

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[4]The U.S. Nuclear Regulatory Commission (NRC) has questioned the extent to which Low-Level Waste Compacts are authorized to "manage" low-level radioactive wastes. If the NRC position is supported by Congress, then the orientation of the two compacts may require some policy changes. The NRC has made similar comments on the management aspect of wastes to all compact groups.

2. Packaging and Transportation of Wastes. (Central States Compact Article III-e and IIIg; Midwest States Compact Article V-d). Transportation and packaging of low-level radioactive wastes has been a problem in the past for low-level waste disposal systems. Inadequate control over packaging and shipment of wastes led to the temporary closure of the Hanford, Washington and Beatty, Nevada sites in 1979. Since that time most of these problems have been corrected. The primary responsibility for regulating the packaging and transportation of wastes lies with the U.S. Department of Transportation and the Nuclear Regulatory Commission.[5]

There is a difference between the Central States and Midwest States Compacts on the issue of regulating the transportation and packaging of wastes. Both compacts suggest that to the extent authorized by federal law, each compact member will enforce any applicable federal and state law or regulation pertaining to packaging or transportation of low-level radioactive waste. The Central States Compact contains an added provision that will require Minnesota to develop a process to ensure that packaging and transportation regulations will be enforced. Article III-e of the Central States Compact states that, "[each party state]...shall adopt practices that will ensure that waste shipments originating within its borders and destined for a regional facility will conform to applicable packaging and transportation laws and regulations." The type of process to be developed is not specified in the compact.

One additional transportation/packaging difference between the Central States Compact and the Midwest Compact is in the authority that the compacts give the Commission to regulate the movement of wastes from the site of generation to a disposal site. Article III-g-4 of the Central States Compact states that "unless authorized by the Commission, it shall be unlawful after January 1, 1986 for any person to transport waste from the site at which it is generated except to a regional facility". Under this compact condition, the Commission and its regional facilities would appear to be granted a monopoly on low-level radioactive waste storage and treatment, as well as disposal, once the waste leaves a generator's site. The Midwest Compact does not contain an equivalent compact condition with regard to waste storage. The reason that the Central States Compact attempts to regulate the movement of wastes after it leaves a generator's site, is to maintain strong control over the volume of wastes ultimately reaching the disposal site. The volume of wastes generated in the Central States region is relatively small, and therefore activities which might significantly reduce or alter the flow of waste to the regionally operated facility could jeopardize the economic operation of the site.

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[5]DOT Hazardus Materials Regulations 49 CFR Part 100-179 NRC Rules and Regulation 10 CFR Part 71.

Implication for Minnesota: The Central States Compact places an added obligation on party states to adopt practices that will ensure that waste shipments originating within its borders conform to applicable packaging and transportation laws. The manner or process that the state elects to develop for ensuring enforcement of regulations can range from simply improving administrative communication and liaision activities with the NRC and the U.S. Dept. of Transportation, to becoming a limited agreement state with the NRC. The Midwest States Compact does not require Minnesota to take on any additional packaging or transportation inspection authority unless it desires to.

The emphasis of the Central States Compact on controlling the movement of wastes once it leaves a generator's site could have an impact on the future development of off-site volume reduction, storage for decay, and incineration programs within the state.

3. Gathering data at the request of the Commission: (Central States Compact Article IV-m-4; Midwest Compact Article V-e). Both the Central States and Midwest States Compacts recognize the need to maintain up-to-date information on the type and volume of waste produced in their regions. This information is essential to the efficient operation of existing disposal facilities and the projection of new facilities.

   Implications for Minnesota: The Minnesota Health Department has prepared an inventory of low-level wastes generated in Minnesota. To maintain and periodically update this information would not be a full-time agency responsibility. This requirement could be satisfied by collecting a copy of each shipment record. This condition is similar for both compacts. The cost for data collection would be minimal and most likely range from $1,000-$5,000 per update. The costs for gathering the inventory data could be financed through special state surcharges on waste generators.

4. Export of waste from the region. (Central States Compact Article III-g-3; Midwest States Compact Article V-c) Both of the compacts in which Minnesota is an eligible state, attempt to limit and control the export of wastes from the compact region. The reason for including a provision on export of waste is to maintain a steady predictable flow of waste to the regional disposal facility. Because the disposal fee schedule is so closely related to the volume being managed at a disposal site, a predictable volume is important to the site's fiscal success. The Nuclear Regulatory Commission has stated that the Low-Level Radioactive Waste Policy Act only allows states to restrict the import of out-of-region wastes.[6] The NRC suggest that the ability for any low-level radio-

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[6]Nuclear Regulatory preliminary review of the Central States Compact. NRC letter to Frank Wilson, Arkansas Department of Health, from G. Kerr NRC Office of State Programs, January 28, 1982. Similar compact conditions have been included in the other regional low-level waste comapcts being developed. The NRC has made the same comments to these compact groups as well. Appendix D contains a copy of NRC's reviews of the two compacts.

active waste compact to control the export of wastes goes beyond the terms of the Federal Act. Further, the Nuclear Regulatory Commission notes that the export limitations in the compacts may be an unconstitutional burden on interstate commerce.

Implications for Minnesota: Having adequate volumes of waste reach a disposal site is important to the fiscal success of the site. This is particularly true for the Central States group or other compact groups where the existing waste volume generated within the region is relatively small. If a compact group has a small initial volume of waste and it cannot control the export of waste, it may consider selectively importing wastes from other compact regions or non-compact states. The Midwest States group has a larger number of potential party states and a greater volume of wastes. These differences may provide the Midwest Compact with a slight benefit with regard to distributing any additional disposal costs that might result from having generators export wastes.

4.2.4 INTERSTATE LOW-LEVEL RADIOACTIVE WASTE COMMISSION. (Central States Compact Article IV, Midwest States Compact Article III).

The Central States and Midwest States Compacts both propose the establishment of an Interstate Low-Level Radioactive Waste Commission to serve as the administrative body for the compact. The composition, administrative authority and general activities of the Commissions are very similar. The basic difference between the two proposed commissions is in the authority and role that the Commission has in designating a host state and a regional disposal facility. The Central States Compact Commission has a rather limited role in proposing a disposal site and of a host state. This Commission is envisioned as taking a reactive role to disposal site proposals submitted by potential site operators.

The Midwest States Compact Commission has a much stronger role in the initial designation of a host state. This Commission proposes to develop a regional waste management plan that will identify the general location, type and number of disposal facilities necessary to accomodate the region's wastes. Key elements of the two Commissions are outlined below.

1. Composition and staffing. (Central States Compact Article IV-a,g; Midwest States Compact Article III-a,f). Each of the two compacts propose to have its Commission consist of one representative from each party state. Each state would select its own representative and be responsible for the Commissioner's expenses. Both Commissions propose to have sufficient staff to carry out its duties.

   Implications for Minnesota: The Commissioner from Minnesota should be a high-level policy individual. The duties of the Commissioner would not require a full-time effort of the selected person. As such, the Commissioner and necessary support staff could be drawn from exisitng state employees. The estimated cost to the state in terms of staff time and travel is approximately $10,000 per year. This estimate would be substantially higher if the Minnesota representative is appointed Chairman of the Commission.

The Commission staff will be funded out of user fees collected at the disposal site. The Midwest States Compact Commission proposes more involvement in preparing special studies to support siting and waste management decisions than the Central States Commission. As such, the Midwest States Commission may have a larger support staff and budget. The larger number of eligible states and the volume of waste in the Midwest States may or may not reduce the impact of a higher Commission budget.

2. Commission meeting schedule. (Central States Compact Article IV-d; Midwest States Compact Article III-d). Both compacts provide for the Commission to meet at least once a year. The Midwest States Compact enables any party state to call the Commission into session. The Central States Compact limits the responsibility of calling the Commission together to the chairman, host state, or in response to a petition of a majority of the membership.

   Implications for Minnesota: The Midwest States Compact provides every party state with the opportunity to assemble the Commission. This compact provision is both an advantage and a disadvantage. The provision ensures that Minnesota will be able to convene the Commission to consider issues of state importance. This compact provision could also become a burden in that the Commission may be asked to hear and resolve issues or problems that are primarily of local importance.

3. Commission's Powers and Duties: (Central States Compact Article IV; Midwest States Compact Article III). The overall list of powers and duties proposed for the Central States and the Midwest States Compact Commissions are very similar (see Figure 4.1). As noted, the principal difference between the two compacts is the responsibility given to the Commission for selecting a host state and regional disposal facility. In the Central States Compact, the Commission will assume a relatively passive role in the identification of a host state. This Commission will respond to applications for a disposal facility that are submitted by potential site operators. After reviewing the applications, the Commission will select an operator and give that individual exclusive rights in the region to pursue proper siting and licensing of the facility.

   The Midwest States Compact envisions a much stronger Commission role in the selection of a host state. In the Midwest States Compact the Commission will prepare and adopt a Management Plan. This plan will: designate a host state; identify the number and type of disposal facilities to be constructed; identify siting criteria, and project future disposal needs. The Commission will also conduct a public hearing on the plan if requested by the host state. Following the Commission's final designation of a host state, the state and/or the Nuclear Regulatory Commission will proceed to site and license the facility.

One additional distinction between the powers and duties of the two Compact Commissions, is the authority that the Midwest States Compact Commission has relative to emergency site closure. Article III-h-3 of the Midwest Compact says that "The Commission may review the emergency closure of a regional facility, determine the appropriateness of such closure, and take whatever actions are necessary to insure that the interests of the region are protected." The Central States Compact has no similar provision.

Implications for Minnesota: The duties and powers that a Commission assumes will have important implications for all party states. The primary duty of the Commission is to coordinate the designation of a host state. Both the Central States and Midwest Compacts assign the responsibility of host state designation to the Compact Commission. The process by which the commission selects a host state, however, is quite different.

A. Siting Authority

The Central States Commission proposes to take a reactive role to designation. The Commission will not actively propose any regional location for a disposal site. Instead, the Commission will respond to proposals initiated by private site operators. This approval has both advantages and disadvantages.

Advantages:

1. Potential host states will not have to finance any siting, costs. Proposals developed by private site operators assumes that the proposer has sufficient resources to site, license and develop a facility. Any review, inspection or siting costs that a host state might experience can be billed to the proposing site operator.

2. Requiring prospective site operators to submit siting proposals and assume all siting costs, assures the Commission of identifying serious operators willing to assume the financial risks necessary for developing a disposal facility.

3. The Central States siting process has the potential advantage of minimizing the time necessary to site and develop a facility.

Disadvantages:

1. The siting process outlined in the Central States Compact does not promote the identification or selection of the most technically superior site in the region. The Commission screens and reviews only those proposals sub-

mitted by prospective site operators. While these sites may be capable of accommodating a low-level radioactive waste site, they may not be the "best" sites in the region. This disadvantage is minimized by the fact that the NRC's proposed rules 10-CFR-61 sets minimum standards and guidelines for disposal facilities. The guidelines are established based upon what site characteristics are necessary to technically support a low-level radioactive waste disposal site.

2. The approach to host state designation used by the Central States Compact does not require prospective site operators to undergo any formal preliminary review by potential host states. Prospective site operators and potential host states will, however, have to communicate to ensure that the site is generally licensable. One problem is that the potential host state assumes a reactive position to proposals developed by private site operators. As such, if a host state wants to pursue an alternative, it has to convince the private site operator that the alternative is worthy of review.

The Midwest Compact Commission envisions a stronger and proactive role in the designation of a host state. The Commission will develop and adopt a Management Plan that will serve to designate the host state.

Advantages:

1. Each party state has an opportunity to participate in the development and adoption of the Management Plan. In this way the individual states can directly determine what initial host state options will be considered by the Commission.

2. Depending upon a host state's siting process, a broader range of alternative sites within a host state may be examined.

Disadvantages:

1. The process outlined in the Midwest Compact could be time consuming.

2. The process assigns the responsibility for identifying possible sites to the host state. A detailed siting process could be expensive for a state to undertake. This disadvantage can be minimized if the host state adopts a siting process that begins by selecting a potential site operator. The operator could then finance all siting costs.

3. The process outlined in the Midwest Compact does not insure that there is an operator willing to undertake

the financial risks of developing a site in the designated host state or at the site identified by the host state.

One added difference between the two compact siting procedures is that the Midwest Compact Commission may hold a public hearing on the Management Plan. The hearing will be held at the request of any host state identified in the Plan. The compact does not specify what format or purpose the hearing is to serve. The hearing could be a fact-finding hearing in that the citizens and officials of a potential host state have an opportunity to present information concerning the designation of a host state. The hearing could also be a general information meeting.

B. Selection of a Site Operator

The impact on Minnesota of selecting a site operator is related to the role the Compact Commission will take. The Central States Compact assigns the responsibility of initially selecting a site operator to the Commission. The Midwest Compact assigns this responsibility to the host state.

C. Financial Impact

The financial impact on Minnesota waste generators in terms of fees assessed to support a Commission can not be determined at this time. Because the Midwest Commission anticipates undertaking more technical studies and proposes to undertake a more active role in siting facilities than the Central States Commission, the Midwest Commission could have a relatively large budget. The impact on Minnesota of a larger commission budget will depend upon how many states ultimately join the compact, the volume of wastes managed through the compact and the type and number of studies undertaken by the Commission. The Midwest States group has more potential members and a larger potential waste volume over which to disperse this cost than the Central States group. In the Central States Compact, Minnesota generators might have to support a larger percentage of the Commission's budget because of the smaller overall volume of wastes generated in this region, and the fact that Minnesota is the Compact's largest generator.

4. Commission Funding. (Central States Compact, Article IV-h-1; Midwest States Compact, Article III-i-1). Both compacts propose to fund all Commission activities through fees levied against the users of the disposal facility. The compacts also recognize, however, that the Commission will have to begin functioning before a disposal facility is operational. As such, both compacts propose that the party states supply interim financing for the Commission. The Midwest States Compact seeks to supply this funding through a $50,000 initiation fee. In the Central States Compact, this funding would come from yearly contributions of up to $25,000 from each party state.

The financial implication for Minnesota depends upon the states joining a compact, the tasks that the Commission will undertake, and the time that it will take for a site to begin operating. For the Midwest States Compact, it would appear that Minnesota would have to provide $50,000 as an "initiation" fee to fund the Commission. In the Central States Compact, assuming: (1) a site is operational by 1986, (2) the compact assesses the maximum of $25,000 per year, and (3) Minnesota joins the compact group in 1983, the states contribution for the Commission's activities would be $75,000. In both cases the state could develop a mechanism by which these costs would ultimately be reimbursed by waste generators.

4.2.5 DEVELOPMENT AND OPERATION OF REGIONAL FACILITIES. (Central States Compact Article V; Midwest States Compact Article IV and VI.

The primary purpose for the two compacts is to provide a mechanism for the siting and development of regional low-level radioactive waste facilities. The Central States Compact and the Midwest States Compact offer two distinctive approaches for identifying a potential host state and disposal facility location. Figures 4.6 and 4.7 illustrate, in schematic form, the siting processes as outlined in the two compacts. Because the two compacts offer dissimilar approaches to siting, they are discussed separately below.

1. Central States Compact Site Development and Operation. The siting process proposed in the Central States Compact emphasizes a rather strong role for private corporations interested in the development and operation of low-level radioactive waste disposal facilities. The process is initiated when a prospective site operator submits a siting proposal to the Central States Commission for consideration. The Commission will not propose a site itself but rather will review proposals submitted from qualified site operators. The Commission's review will be based upon the following criteria:

    1. The capability of the applicant to obtain a license.

    2. The economic efficiency of the proposed facility.

    3. Financial assurances.

    4. Accessibility to all party states.

    5. Other criteria that the Commission may deem necessary.

    The Commission will select from the applications submitted, at least one proposal. The individual whose proposal was selected will then be authorized to pursue the licensure and permitting process applicable to the state in which the site will be located. If the host state has a siting process or review procedure for locating and regulating low-level radioactive facilities, that process is initiated. If there is no state siting process, the NRC or agreement state licensing procedures would be initiated. When the site is

Figure 4.6

CENTRAL STATES COMPACT SITING PROCESS

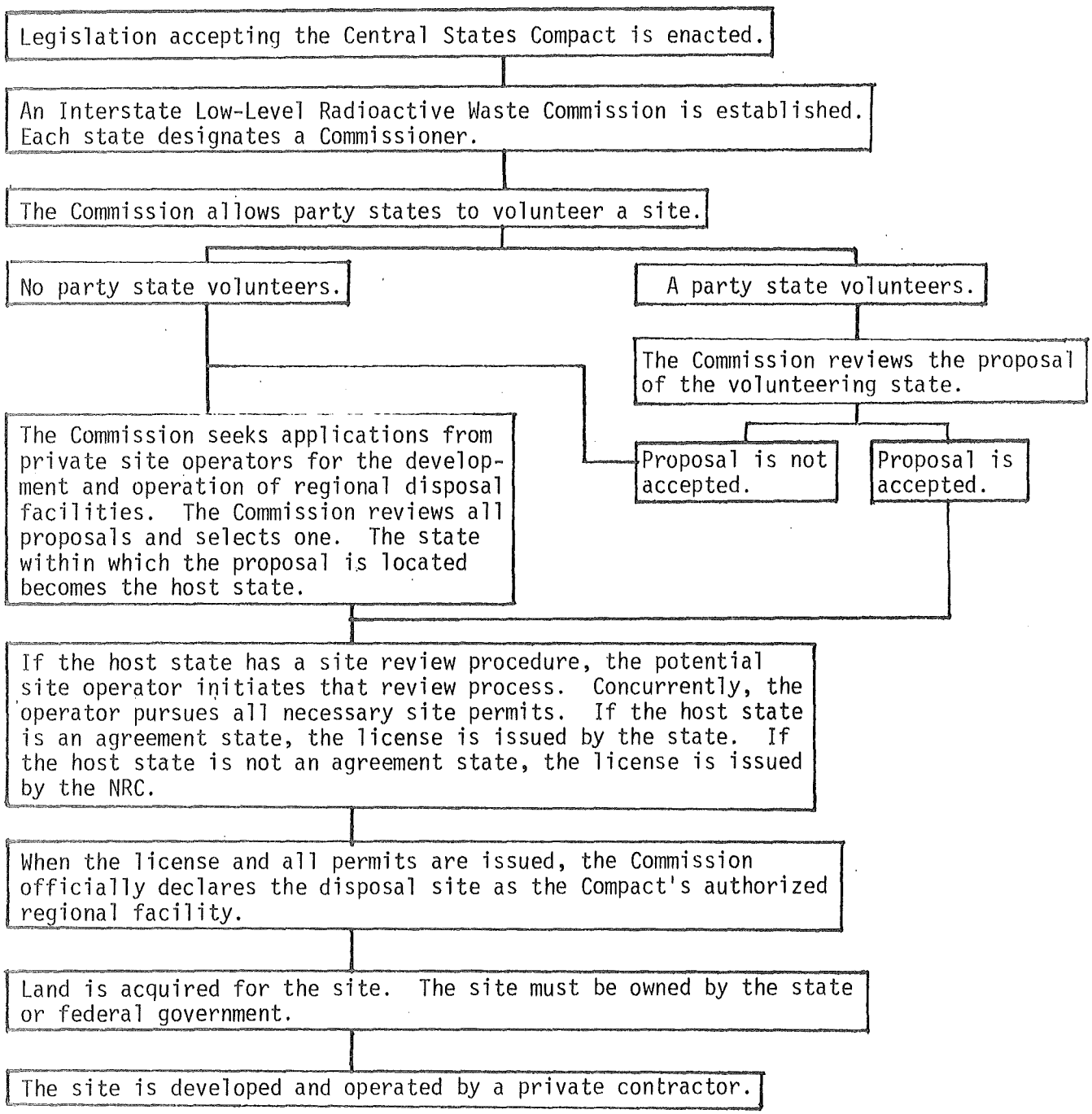
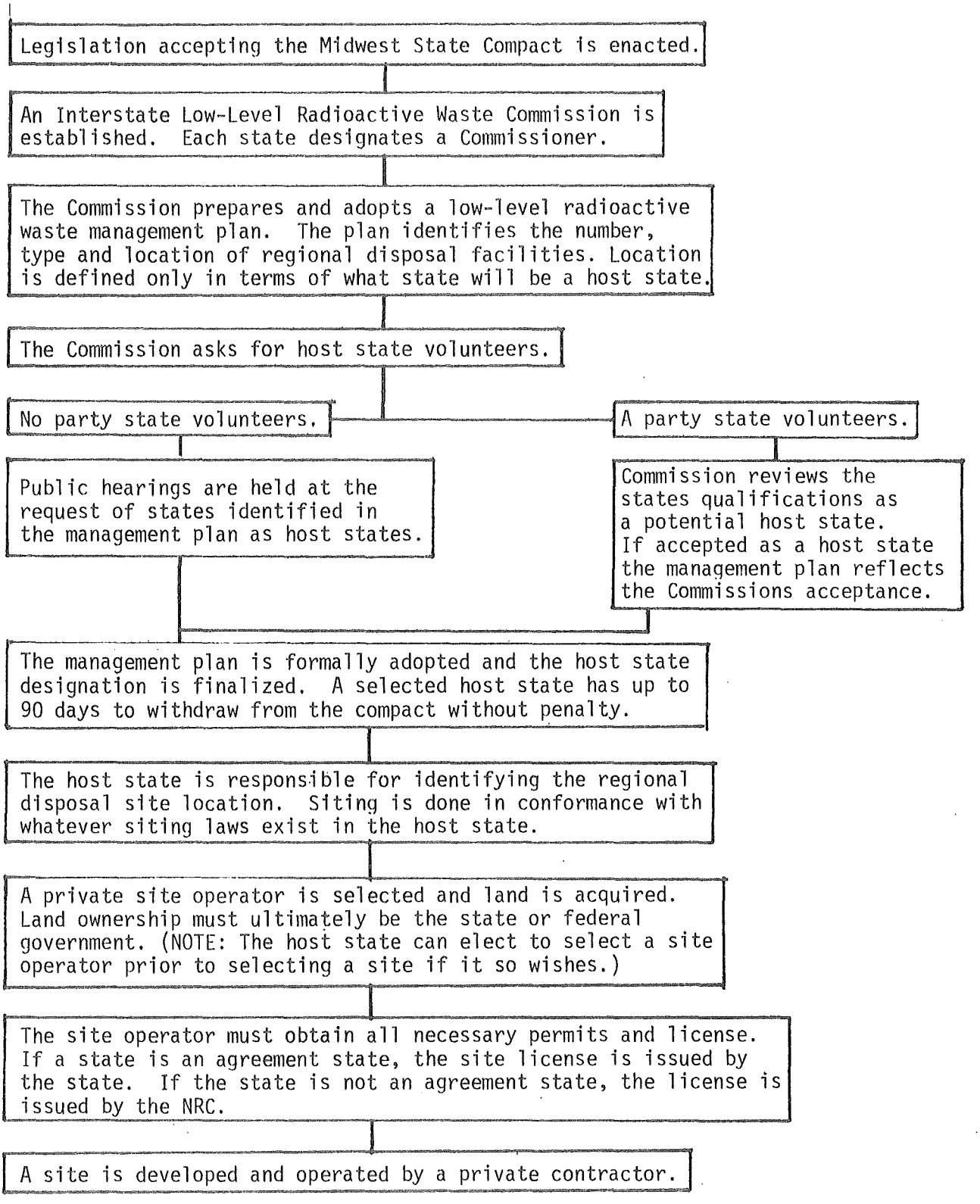


Figure 4.7

MIDWEST STATES COMPACT SITING PROCESS



finally licensed, the Central States Committee declares the site to be the Compact's regional facility. This entitles the facility to accept all of the wastes generated within the compact region.

Once the site becomes operational, the host state will collect fees from site users to cover all host state administrative, inspection, long-term care, and other costs related to the regulation, maintenance and closure of the disposal facility. The host state also collects the fees necessary to fund the Commission's annual budget. The fees levied, are set by the host state while the disposal rates that are charged by the site operator are set by the operator with review and approval of the host state. The disposal rates may be subject to regulated rate hearings in each host state.

Implications for Minnesota: Under the Central States siting process, the proposals for sites submitted to the Commission are not required to undergo any preliminary review by the states in which potential sites are located. After being designated, the state would have to proceed with a review of the siting proposal approved by the Commission.

The Central States Compact also gives the Commission the authority to designate a potential site operator. The host state must accept this operator as having the "exclusive" right to pursue site licensing in the state. The state does not have the option of selecting an alternative site operator. There is an advantage to having an operator selected prior to a site in that the host state can have the prospective operator pay for all initial siting, review and licensing costs that might be incurred by the state.

Part of site operation is the imposition of fees. The impact of how fees are determined depends on whether Minnesota is selected as a host state or not. If Minnesota becomes a host state, it has the option of having its fee system reviewed and approved by the Commission. If the host state elects not to have its fees reviewed, it sets the fee schedule by itself. There is, however, a potential consequence. If a state does not submit its fee schedule to the Commission for review, all expenditures, regulatory costs or emergency closure costs that exceed revenue received from the disposal site, are the responsibility of the host state. If the fees are reviewed by the Commission, all party states would share in the additional costs.

B. Midwest States Compact Site Development and Operation Process. The siting process proposed in the Midwest States Compact focuses on the development of a Regional Low-Level Radioactive Waste Management Plan. A key feature of the Plan is its identification of the number and type of disposal facilities to be developed as well as an adoption of general criteria to be used in siting a facility. The Plan will also indicate which states should be designated as host states. The criteria to be used by the Commission in selecting potential host states include:

1. The health, safety and welfare of the citizens of the party states.

2. The existence of regional facilities within each party state.

3. The minimization of waste transportation.

4. The volumes and types of wastes generated within each party state.

5. The environmental, economic, and ecological impact on the air, land and water.

When the Plan is completed (the first draft should be completed by late 1982), the Commission will conduct a public hearing in any host state requesting it. After the Plan is adopted by the Commission, the host states will determine (using their own siting process if there is one) possible facility locations within their borders. Having identified sites, the host states and/or the Nuclear Regulatory Commission would then proceed to license and permit the facilities.

Once the site becomes operational, the host state will collect fees from site users to cover all host state administrative, inspection, long-term care and other costs related to the regulation, maintenance and closure of the disposal facility. The host state will also collect the funds necessary to support the Commission's annual budget. The fees levied will be established by the host state; however, the Commission will receive an annual audit of how the fees were spent. Finally, the disposal rates charged to facility users will be established by the site operator with approval by the host state.

Implications for Minnesota. The compact calls for the preparation of a Management Plan. A draft of the Plan is being prepared by a special subcommittee of the Midwest group and should be available by late summer of 1982. (Minnesota is not a member of the subcommittee.) Once the draft plan is completed, all party states will have an opportunity for review prior to the plan's adoption. As such, the Management Plan will identify which states are likely to be designated host states prior to the compact being presented to the Minnesota legislation in 1983.

The Midwest Compact offers any designated host state the opportunity to request a public hearing in the state. The compact; however, does not specify the format of the hearing or what the purpose of the hearing will be. The Midwest Compact also gives each host state the authority to select a site operator. Unlike the Central States Compact, the Midwest Compact does not pre-select an operator prior to siting the facility. A designated host state, however, can pre-select an operator if it so wishes. The difference is that the host state and not the Commission does the selection. The selected

operator would then finance all siting costs. If a state does not elect to pre-select an operator, the host state would be responsible for all siting costs. Depending on the siting requirements of the host state, these siting costs could run into millions of dollars. One final distinction of the Midwest siting process is the fact that a host state can withdraw form the compact without penalty if it does so within 90 days of it being designated as a host state.

In the setting of fees, the Commission has the opportunity to review annual audits of how the fees are used. If the fees appear to be unjustified or too high, the Commission can consider specific action against the host state to make the fees more reasonable.

4.2.6 OTHER LAWS AND REGULATIONS. (Central States Compact, Article VI; Midwest States Compact, Article VII).

Both compact documents have similar language regarding the application, enforcement or enactment of laws or regulations by party states that conflict with the purpose and intent of the compact. In general, provisions of an interstate compact supersede state laws. As such, some of Minnesota's existing laws and regulations may be declared null and void as they relate to activities covered in the compacts.

Implications for Minnesota: (Staff is still researching Minnesota's laws and rules that might be affected by the compact).

4.2.7 ELIGIBLE PARTIES, WITHDRAWAL, REVOCATION, ENTRY INTO FORCE, TERMINATION. (Central States Compact, Article VII; Midwest States Compact, Article VIII).

Both compacts list the states that are initially eligible parties. In addition, the compacts establish a date after which initial eligibility ceases. Nine states are eligible in the Central States group (see Figure 4-3) and sixteen states are eligible in the Midwest States group (see Figure 4-4). Provisions are made in both compacts for the admittance of states not initially listed as eligible for membership in the compact. The Midwest States Compact permits the Commission to establish whatever eligibility requirements it deems appropriate for the admittance of new party states. Both compacts allow party states to withdraw from the compact. After the compacts are in force withdrawal may not take effect until five years after the withdrawing state notifies the Commission.

Party states that fail to comply with the terms of the compact or fulfill their obligations thereunder may have their privileges suspended or membership in the compact revoked by the Commission. Revocation takes effect one year from the date a party state receives written notice from the Commission of its action. Provisions are made in the Central States Compact for monetary penalties against a party state whose membership has been revoked. No explicit penalties are outlined in the Midwest Compact.

Minnesota's eligibility in the Central State Compact expires on January 1, 1984. Its eligibility expires on July 1, 1984 in the Midwest States Compact. If the state does not join the compacts by these dates, they

would have to petition the compacts to be considered as a possible party state. There are no assurances, however, that the compact would accept Minnesota after their eligibility runs out. In addition, Minnesota might have to pay a penalty if it is permitted to join after their eligibility runs out. In the Midwest States Compact, this penalty could be automatic designation as a host state. (Article VIII-b).

4.2.8 PENALTIES. (Central States Compact, Article VIII; Midwest States Compact, Article IX).

Each party state, under both compacts, will prescribe and enforce penalties against any person violating provisions of the compact.

Implications for Minnesota: Under both compacts, the state may wish to review and appropriately modify its civil penalty provisions in the areas of transportation, packaging and storage of low-level radioactive waste.

4.2.9 LONG-TERM CARE COSTS AND LAND OWNERSHIP. (Central States Compact, Article III-b, III-c; Midwest States Compact, Article IV-f, IV-j).

The proposed federal guidelines for licensure of a low-level radioactive waste disposal facility are quite specific as they pertain to land ownership, long-term care, and financial assurances.[7] Both compacts assume that regional disposal sites will be on lands owned either by the host state or the Federal government. Both compacts also assume that the host states, through its fee schedule, will establish sufficient funds to cover closure and long-term care costs of the facilities. Long-term care and maintenance will cover a period of approximately 100 years.

Implications for Minnesota: There are no major differences in the language of the two compacts on the issue of long-term care costs or land ownership. The impact of the compact provisions addressing long-term care costs depends on whether or not Minnesota becomes a host state. If Minnesota is selected as a host state the compact provisions and the Nuclear Regulatory Commission's licensure regulations should offer adequate protection for the state with regard to long-term care costs.

Both compacts see the state fees levied against the site users as generating specific funds that would be earmarked for long-term care and closure. It should be noted that for one facility--Maxey Flats, Kentucky--resources in the long-term care fund were insufficient to cover all closure and stabilization costs. The long-term care funds have recently come under review by site operators and host states. Contributions to the long-term care fund for the Hanford, Washington site were recently increased. Based upon the operation of the existing Barnwell, South Carolina site, these funds average approximately $1.25/cu. ft. of waste received. This amounts to about 2½ million

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[7]Nuclear Regulatory Commission's licensure regulations (10 CFR Part 61, sections 61.59-61.63).

dollars annually. The Central States Compact recognizes that if the funds are insufficient for a host state to adequately carry out its long-term care responsibilities, all party states will share in the additional expenses. The host state, however, must have its fee schedule reviewed by the commission if it expects the other party states to share financial liabilities of the site. The Midwest Compact states that the host state will assume all decommissioning, long-term care and closure costs. The Midwest Compact does not explicitly provide for other members sharing the cost of long-term care if there are insufficient funds.

In addition to the compact provisions on long-term care costs, the Nuclear Regulatory Commission's proposed licensure requirements 10 CFR 61 paragraph 61.62 states that:

> "The applicant [for a license] shall provide assurances prior to the commencement of operations, that sufficient funds will be available to carry out disposal site closure and stabilization, including: (1) decontamination or dismantlement of land disposal facility structures; and (2) closure and stabilization of the disposal site so that following transfer of the site to the owner [either the State or the Federal government] the need for ongoing active maintenance is eliminated and only minor custodial care, surveillance and monitoring are required."

To ensure that the site operator has adequate financial resources to accomplish proper decommissioning and long-term care, NRC requires as a condition for license, that the operators establish acceptable financial surety arrangements such as: surety bonds, cash deposits, escrow accounts, trust funds, etc., in the amount to cover estimated cost of future site closure and stabilization.

If Minnesota is not selected as a host state, the issue of long-term care and site ownership is of less immediate importance. Nevertheless, the state should recognize that it could have future financial obligations to the compacts if there are insufficient closure and stabilization funds. In the Central States Compact, there are fewer states to share any unexpected closure and stabilization costs. The Midwest States Compact has more party states to share unanticipated costs with.

Chapter 5

CHAPTER 5

TASK FORCE FINDINGS

Since October, 1981, the Governor's Task Force on Low-Level Radioactive Waste has examined various options available to Minnesota for meeting its future low-level radioactive waste disposal needs. In general, the Task Force concludes that Minnesota's low-level radioactive waste can be most safely, efficiently and economically managed on a regional basis. Toward this end, the Task Force supports the concept of Minnesota joining with adjacent states to form a Low-Level Radioactie Waste Interstate Compact.

Minnesota is presently eligible to join two interstate compact groups. These are the Central States Compact and the Midwest States Compact groups. The Task Force has reviewed the specific conditions outlined in the two proposed compact documents and has identified several advantages and disadvantages associated with each. These are discussed in Chapter 4.

Although the compact documents are in a relatively final form, there are several unknowns that could significantly influence Minnesota's choice. These include:

a) The Central States Compact has a site proposal before it. If this site is approved by the Interstate Commission and the potential host state (Kansas), that compact group could have a site operational within a relatively short period of time.

b) Although the Midwest States Compact does not have any proposed facility at this time, this compact group is preparing a low-level waste management plan. The plan will identify potential host states. A draft of the plan should be available by August 1982. It is not likely that any of the eligible states will have adopted the compact prior to the plan's completion. As such, it is not known which, if any, of the host states identified in the plan will be members of the Midwest Compact.

c) The Central States Compact has been endorsed by two states--Kansas and Nebraska. If one more state endorses the compact document, that compact could become effective relatively soon.

d) The Midwest States Compact language is still being reviewed by the eligible member states. No state has formally approved the compact at this time. It is unknown if any major changes to the compact will be forthcoming.

Due to these unknowns, the Task Force feels it is premature to endorse one compact over the other at this time. As conditions change, the likelihood that one or both compacts will effectively demonstrate that a regional disposal site will be available by 1986 will improve. As such, the Task Force will continue to monitor events and may elect to recommend a specific compact in the future.

appendix

APPENDIX A FEDERAL LOW-LEVEL RADIOACTIVE WASTE ACT.

Federal Low-Level Radioactive waste Policy Act.

Minnesota Executive Order 81-10.

Public Law 96-573
96th Congress

An Act

To set forth a Federal policy for the disposal of low-level radioactive wastes, and for other purposes.

Dec. 22, 1980
[S. 2189]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Low-Level Radioactive Waste Policy Act.

SHORT TITLE

SECTION 1. This Act may be cited as the "Low-Level Radioactive Waste Policy Act". 42 USC 2021b note.

DEFINITIONS

SEC. 2. As used in this Act— 42 USC 2021b.

(1) The term "disposal" means the isolation of low-level radioactive waste pursuant to requirements established by the Nuclear Regulatory Commission under applicable laws.

(2) The term "low-level radioactive waste" means radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11 e. (2) of the Atomic Energy Act of 1954.

(3) The term "State" means any State of the United States, the District of Columbia, and, subject to the provisions of Public Law 96-205, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and any other territory or possession of the United States.

(4) For purposes of this Act the term "atomic energy defense activities of the Secretary" includes those activities and facilities of the Department of Energy carrying out the function of—

(i) Naval reactors development and propulsion,

(ii) weapons activities, verification and control technology,

(iii) defense materials production,

(iv) inertial confinement fusion,

(v) defense waste management, and

(vi) defense nuclear materials security and safeguards (all as included in the Department of Energy appropriations account in any fiscal year for atomic energy defense activities).

GENERAL PROVISIONS

SEC. 3. (a) Compacts established under this Act or actions taken under such compacts shall not be applicable to the transportation, management, or disposal of low-level radioactive waste from atomic energy defense activities of the Secretary or Federal research and development activities. 42 USC 2021c.

(b) Any facility established or operated exclusively for the disposal of low-level radioactive waste produced by atomic energy defense activities of the Secretary or Federal research and development

activities shall not be subject to compacts established under this Act or actions taken under such compacts.

LOW-LEVEL RADIOACTIVE WASTE DISPOSAL

State compacts regarding regional facilities
42 USC 2021d.

SEC. 4. (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.

Congressional consent.

(B) A compact entered into under subparagraph (A) shall not take effect until the Congress has by law consented to the compact. Each such compact shall provide that every 5 years after the compact has taken effect the Congress may by law withdraw its consent. After January 1, 1986, any such compact may restrict the use of the regional disposal facilities under the compact to the disposal of low-level radioactive waste generated within the region.

Report to Congress and States

(b)(1) In order to assist the States in carrying out the policy set forth in subsection (a)(1), the Secretary shall prepare and submit to Congress and to each of the States within 120 days after the date of the enactment of this Act a report which—

(A) defines the disposal capacity needed for present and future low-level radioactive waste on a regional basis;

(B) defines the status of all commercial low-level radioactive waste disposal sites and includes an evaluation of the license status of each such site, the state of operation of each site, including operating history, an analysis of the adequacy of disposal technology employed at each site to contain low-level radioactive wastes for their hazardous lifetimes, and such recommendations as the Secretary considers appropriate to assure protection of the public health and safety from wastes transported to such sites;

(C) evaluates the transportation requirements on a regional basis and in comparison with performance of present transportation practices for the shipment of low-level radioactive wastes, including an inventory of types and quantities of low-level wastes, and evaluation of shipment requirements for each type of waste and an evaluation of the ability of generators, shippers, and carriers to meet such requirements; and

(D) evaluates the capability of the low-level radioactive waste disposal facilities owned and operated by the Department of Energy to provide interim storage for commercially generated low-level waste and estimates the costs associated with such interim storage.

(2) In carrying out this subsection, the Secretary shall consult with the Governors of the States, the Nuclear Regulatory Commission, the Environmental Protection Agency, the United States Geological Survey, and the Secretary of Transportation, and such other agencies and departments as he finds appropriate.

Approved December 22, 1980.

LEGISLATIVE HISTORY

SENATE REPORT No. 96-548 (Comm. on Energy and Natural Resources)
CONGRESSIONAL RECORD, Vol. 126 (1980):
July 28-30, considered and passed Senate.
Dec. 3, H.R. 8378 considered and passed House, passage vacated and S. 2189, amended, passed in lieu.
Dec. 13, Senate agreed to the House amendment with amendments. House agreed to Senate amendments.

STATE OF MINNESOTA

EXECUTIVE DEPARTMENT

EXECUTIVE ORDER NO. 81-10

Providing For The Establishment Of A Governor's Task Force On Low-Level Radioactive Waste Management

I, ALBERT H. QUIE, Governor of the State of Minnesota, by virtue of the authority vested in me by the Constitution of the State of Minnesota and applicable statutes, do hereby issue this Executive Order:

WHEREAS, the United States government has placed responsibility on each state to provide for the management of low-level radioactive waste generated within its borders; and

WHEREAS, Minnesota must develop plans for the disposal of low-level radioactive waste in order to discharge this responsibility;

NOW, THEREFORE, I ORDER:

1. The Minnesota Commissioner of Health is designated as the lead official for the executive branch for the

development and implementation of plans for low-level radioactive waste management. The Commissioner or his designee is responsible for negotiating with other states the establishment of interstate compacts for the purpose of joining with those states to address future directions for the management and disposal of low-level radioactive waste.

2. The establishment of the Governor's Task Force on Low-Level Radioactive Waste Management pursuant to Minnesota Statutes, Section 15.0593 and other applicable state statutes.

3. The Task Force shall be composed of no more than fifteen (15) members appointed by the Governor and shall consist of:

   a. One (1) citizen member of the Environmental Quality Board (EQB).

   b. Two (2) members of the House of Representatives.

   c. Two (2) members of the Senate.

   d. Three (3) representatives of generators of low-level radioactive waste.

   e. Two (2) representatives of private citizen groups dedicated to the protection and preservation of the environment.

   f. Two (2) representatives of local government.

an institution of higher education.

i. One (1) medical doctor.

At least two Task Force members shall be farm owners and operators. The Commissioner of Health and the Executive Director of the Pollution Control Agency or their designees shall serve as non-voting ex-officio members of the Task Force. The Governor shall select the Chairman of the Task Force from among its members.

4. The terms of the members of the Task Force shall expire upon completion of its charge as determined by the Chair, but not more than two years from the date of this Order. Per diem shall not be paid to members. Expenses shall be reimbursed according to the rules of the Department of Employee Relations.

5. The Task Force shall be responsible for advising the Commissioner of Health, the Governor, and the Legislature on all policy issues related to the management of low-level radioactive waste including, but not limited to, interstate compact negotiations.

Pursuant to Minnesota Statutes 1980, Section 4.035, this Order shall be effective fifteen (15) days after filing with the Secretary of State and publication in the State Register and shall remain in effect until it is rescinded by proper authority or it expires in accordance with Minnesota Statutes, Section 4.035, Subdivision 3.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 11 of September, 1981.

Filed According to Law:

Albert H. Quie

ALBERT H. QUIE
Governor
State of Minnesota

Joan Anderson Growe

Joan Anderson Growe
Secretary of State

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED
SEP 11 1981
Joan Anderson Growe
Secretary of State

APPENDIX B RADIOACTIVE WASTE USERS.

Minnesota Department of Health 1980
low-level radioactive waste survey.

List of NRC license holders in Minnesota.

RADIOACTIVE MATERIAL LICENSE HOLDERS IN MINNESOTA

Nuclear Regulatory Commission Licensees	Non-Shipper	Shipper
Abbott-Northwestern Hospital Radiation Therapy Department 2727 Chicago Avenue Minneapolis, MN 55407	X	
American Crystal Sugar Company P.O. Box 1227 Moorhead, MN 56560	X	
American Red Cross St. Paul Regional Red Cross Blood Center 100 South Robert Street St. Paul, MN 55102	X	
Arrow Tank & Engineering Company 650 North Emerson Cambridge, MN 55008	X	
Ashland Petroleum Company 100 West Third Avenue St. Paul Park, MN 55071	X	
Augsburg College Minneapolis, MN 55454	X	
Beckman Instruments, Inc. 7262 Washington Avenue South Eden Prairie, MN 55344	X	
Bemidji State University Department of Science and Mathematics Bemidji, MN 55601		X
Bemis Company, Inc. 315 27th Avenue, N.E. Minneapolis, MN 55418	X	

	Non-Shipper	Shipper
Bethel College 3900 Bethel Drive St. Paul, MN 55112		X
Bethesda Lutheran Hospital Department of Radiology 559 Capitol Boulevard St. Paul, MN 55101	X	
Blandin Paper Company 115 First Street Grand Rapids, MN 55744	X	
Boise Cascade Corporation International Falls, MN 56649	X	
Braun Engineering Testing, Inc. 6800 South County Road 18 Minneapolis, MN 55435	X	
Burlington Northern, Inc. Room 1280 176 East Fifth Street St. Paul, MN 55101	X	
Campbell Soup Company 11 South Ninth Street Worthington, MN 56187	X	
Cargill, Inc. Domestic Soybean Crushing Division P.O. Box 1139 Burnsville, MN 55337	X	
Cargill, Inc. 3700 5th Street, N.E. Minneapolis, MN 55421		
Cargill Research Analytical Department 2301 Crosby Road Wayzata, MN 55391	X	

	Non-Shipper	Shipper
Carleton College Northfield, MN 55057		X
Central Mesabi Medical Center 750 East 34th Street Hibbing, MN 55746	X	
Certainteed Corporation P.O. Box 177 Shakopee, MN 55379	X	
Champion Packaging Champion International Corporation P.O. Box 43260 St. Paul, MN 55164	X	
Children's Hospital Sutton Research Lab 345 N. Smith Avenue St. Paul, MN 55102		X
College of Saint Teresa Winona, MN 55987	X	
College of St. Thomas 2115 Summit Avenue St. Paul, MN 55101	X	
Community Memorial Hospital 855 Mankato Avenue Winona, MN 55987	X	
Concordia College 9th Avenue and 7th Street South Moorhead, MN 56060	X	
Control Data Corporation 2800 E. Old Shakopee Road Bloomington, MN 55431	X	

	Non-Shipper	Shipper
Conwed Corporation Arch Street Cloquet, MN 55720	X	
Crown Iron World Company 1229 Tyler Street, N.E. Minneapolis, MN 55413	X	
Dart Environmental and Service Company Environmental Research Division 3725 North Dunlap Street St. Paul, MN 55112	X	
William F. Davnie 4517 Normandale Highland Drive Minneapolis, MN 55437	X	
Department of Health, Education and Welfare Food and Drug Administration 240 Hennepin Avenue Minneapolis, MN 55401	X	
Department of the Interior Bureau of Indian Affairs Roads Branch P.O. Box 97 Cass Lake, MN 56633	X	
Detector Electronics Corporation 6901 110th Street West Minneapolis, MN 55435	X	
Diagnostic Management, Inc. DBA University Nuclear Pharmacy 2233 University Avenue, Suite 220 St. Paul, MN 55114	X	
Divine Redeemer Hospital 200 Earl Street St. Paul, MN 55106	X	

	Non-Shipper	Shipper
Donaldson Company, Inc. P.O. Box 1299 Minneapolis, MN 55440	X	
Douglas County Hospital Radiology Department 111 17th Street Alexandria, MN 56308	X	
Economics Laboratory, Inc. Osborn Building St. Paul, MN 55102	X	
The Eitel Hospital Department of Radiology 1375 Willow Street Minneapolis, MN 55403	X	
Environmental Protection Agency National Water Quality Laboratory 6201 Congdon Boulevard Duluth, MN 55804		X
Erie Mining Company P.O. Box 847 Hoyt Lakes, MN 55750	X	
Eveleth Expansion Company P.O. Box 1064 Virginia, MN 55792	X	
FMC Corporation Northern Ordnance Division Columbus Heights Post Office Minneapolis, MN 55421	X	
Fairview-Southdale Hospital 6401 France Avenue South Minneapolis, MN 55435	X	

	Non-Shipper	Shipper
Fiberite Corporation 515 W. 3rd Street Winona, MN 55987	X	
Fire Watch, Inc. 2490 University Avenue St. Paul, MN 55114	X	
General Mills, Inc. 9000 Plymouth Avenue North Minneapolis, MN 55427	X	
Geo. A. Hormel & Company Corporate Engineering Division P.O. Box 800 Austin, MN 55912	X	
Golden Valley Health Center Department of Pathology 4101 Golden Valley Road Golden Valley, MN 55422	X	
Green Giant Company c/o The Pillsbury Company 311 Second Street, S.E. Minneapolis, MN 35414	X	
Gustavus Adolphus College St. Peter, MN 56082		X
Trustees of the Hamline University 1536 Hewitt Avenue St. Paul, MN 55101	X	
Hanna Mining Company 2125 East Second Avenue Hibbing, MN 55746	X	
Henkel Corporation 2010 East Hennepin Avenue Minneapolis, MN 55413	X	

	Non-Shipper	Shipper
Hennepin County Medical Center 701 Park Avenue South Minneapolis, MN 55415		X
Hibbing Area Vocational-Technical Institute 2900 East Beltline Hibbing, MN 55746	X	
Hibbing Taconite Company Pickands Mather & Co. Managing Agent P.O. Box 589 Hibbing, MN 55746	X	
Honeymead Products Company 25 44th Avenue, N.E. Minneapolis, MN 55421	X	
Honeywell, Inc. Technology Center 10701 Lyndale Avenue South Bloomington, MN 55420	X	
Honeywell, Inc. Avionics Division Mail Station MN17-3636, 2600 Ridgeway Parkway Minneapolis, MN 55413	X	
Honeywell Defense System Division Building 103 MN 29-3610 New Brighton, MN 55112		X
Hutchinson Area Vocational-Technical Institute 200 Century Avenue Hutchinson, MN 55350	X	
Hutchinson Industrial Corporation 40 West Highland Park Hutchinson, MN 55350	X	

	Non-Shipper	Shipper
Immuno Nuclear Corporation 6303 Osgood Avenue North Stillwater, MN 55082		X
Inland Steel Mining Company Minorca Mine P.O. Box 1 Virginia, MN 55792	X	
Israelson & Associates, Inc. 9100 West Bloomington Freeway Bloomington, MN 55431	X	
Itasca Memorial Hospital 126 S.E. 1st Avenue Grand Rapids, MN 55744	X	
J. L. Leong & Associates, Inc. Analytical & Consulting Chemist- Toxicologist 2021 East Hennepin Avenue Minneapolis, MN 55413	X	
Jones & Laughlin Steel Corporation Raw Materials Department (Northwest Ore Division) Box 941 Virginia, MN 55792	X	
Kallestad Laboratories, Inc. Research and Development Department Chaska, MN 55318		X
Koch Refining Company P.O. Box 43596 St. Paul, MN 55164	X	
Laboratory of Clinical Medicine 310 Belle Avenue Mankato, MN 56001	X	

	Non-Shipper	Shipper
Lake Center Industries 111 Market Street Winona, MN 55987		X
Lake Region Hospital Association 712 South Cascade Fergus Falls, MN 56537	X	
Lakehead Testing Laboratory, Inc. P.O. Box 7168 Duluth MN 55807	X	
Land O'Lakes, Inc. Soybean Division Eighth and Diagonal Streets Dawson, MN 56232	X	
Land O'Lakes, Inc. 614 McKenley Place Minneapolis, MN 55413	X	
Lufkin Medical Laboratories 1103 Second Avenue South Minneapolis, MN 55403	X	
Lutheran Deaconess Hospital 2315 - 14th Avenue South Minneapolis, MN 55404	X	
Macalester College Department of Chemistry St. Paul, MN 55101	X	
Magnetic Peripherals, Inc. 7801 Computer Avenue Minneapolis, MN 55435	X	
Mankato State College Trafton Room N-151 Mankato, MN 58001	X	

	Non-Shipper	Shipper
Mayo Clinic Department of Therapeutic Radiology Rochester, MN 55901		X
Mayo High School ESC Building 334 16th Street, S.E. Rochester, MN 55901	X	
McLaughlin Gormley King Company 8810 Tenth Avenue North Minneapolis, MN 55427	X	
Medtronic, Inc. Rice Creek 6970 Old Central Avenue, N.E. Fridley, MN 55432	X	
Meeker County Memorial Hospital 612 South Sibley Avenue Litchfield, MN 55355	X	
Memorial Hospital 725 Dellwood Cambridge, MN 55432	X	
Mercy Medical Center Department of Radiology 4050 Coon Rapids Boulevard Coon Rapids, MN 55433	X	
The Methodist Hospital Nuclear Medicine Laboratory 6500 Excelsior Boulevard Minneapolis, MN 55426		X
Metropolitan Medical Center 900 South Eighth Street Minneapolis, MN 55404	X	

	Non-Shipper	Shipper
Metropolitan Waste Control Commission 2400 Childs Road St. Paul, MN 55106	X	
Midway Hospital 1700 University Avenue St. Paul, MN 55104	X	
Midwest Radiation Consultants 16 Park Lane Minneapolis, MN 55416	X	
Midwest Research Institute North Star Division 10701 Red Circle Drive Minnetonka, MN 55343	X	
Miller-Dawn Hospital & Medical Center Radiation Therapy Department 502 E. Second Street Duluth, MN 55805	X	
Minneapolis Electric Steel Castings Company Division of Evans Products 3901 University Avenue Minneapolis, MN 55421	X	
Minneapolis Health Department Bureau of Laboratories 250 South Fourth Street Minneapolis, MN 55415	X	
Mineapolis Institute of Art 2400 3rd Avenue, South Minneapolis, MN 55404	X	
Minneapolis War Memorial Blood Bank 2304 Park Avenue Minneapolis, MN 55404		X

	Non-Shipper	Shipper
Minnesota Department of Health Division of Environmental Health Section of Analytical Services 717 Delaware Street, S.E. Minneapolis, MN 55440	X	
Minnesota Department of Public Safety P.O. Box 17007 St. Paul, MN 55417	X	
Minnesota Department of Transportation John Ireland Boulevard St. Paul, MN 55155	X	
Minnesota Gas Company Research Department 6161 Golden Valley Road Minneapolis, MN 55422	X	
Minnesota Mining & Manufacturing Co. Medical Department/3M 220-2E-02 3M Center St. Paul, MN 55105		X
Minnesota Power and Light Company Environmental Laboratory 30 West Superior Street Duluth, MN 55802	X	
Minnesota Valley Testing Laboratories, Inc. 326 Center Street New Ulm, MN 56073	X	
Molecular Genetics, Inc. 5245 Edina Industrial Boulevard Edina, MN 55435		X
Moorhead State University Moorhead, MN 56560	X	

	Non-Shipper	Shipper
Mounds Park Hospital 200 Earl Street St. Paul, MN 55106	X	
Mount Sinai Hospital Association Department of Radiology 2215 Park Avenue Minneapolis, MN 55406	X	
Naeve Hospital Radiology Department 408 Fountain Street Albert Lea, MN 56007	X	
National Biocentric Division Environmental Research Group 4663 North Chatsworth Street St. Paul, MN 55112	X	
Nite-Site, Inc. P.O. Box 0 Rosemount, MN 55068	X	
North Memorial Medical Center Department of Radiology 3220 Lowry Avenue North Minneapolis, MN 55422	X	
North Star Steel Company 1678 Red Rock Road St. Paul, MN 55164	X	
Northern Medical Imaging, Inc. 102 W. 26th Street Bemidji, MN 56601	X	
Northern States Power Company 414 Nicollet Mall Minneapolis, MN 55401		X(2)

	Non-Shipper	Shipper
Northern Sun Products Company P.O. Box 646 Convick, MN 56644	X	
Northland Engineering Company 141 Hickory Street Mahtomedi, MN 55115	X	
Northwest Airlines, Inc. Minneapolis - St. Paul International Airport Main Overhaul Base St. Paul, MN 55111	X	
Northwestern Hospital Department of Radiology 1406 Sixth Avenue North St. Cloud, MN 56301	X	
Northwood Panelboard Company P.O. Box 1437 819 Midway Road Bemidji, MN 56601	X	
Physicians Med Labs 363 Southdale Medical Building Edina, MN 55435	X	
Pickands Mather & Company Box 278 Hibbing, MN 55746	X	
Potlatch Corporation Research Center, Paper Group Cloquet, MN 55720	X	
James L. Purdie, M.D. 9013 North Shore Trail Forest Lake, MN 55025	X	

	Non-Shipper	Shipper
Ramsey Engineering Company 1853 West County Road C St. Paul, MN 55113	X	
Reserve Mining Company Silver Bay, MN 55614	X	
Rice Memorial Hospital Department of Radiology 402 West Third Street Willmar, MN 56201	X	
Riverview Hospital 320 South Hubbard Crookston, MN 56716	X	
St. Mary's College Bro. Jerome Rademacher, F.S.C. Winona, MN 55987	X	
St. Ansgar Hospital 715 N. 11 Street Moorhead, MN 56560	X	
St. Cloud Hospital Department of Radiology 1406 Sixth Avenue North St. Cloud, MN 56301	X	
St. Francis Hospital 415 Oak Street Breckenridge, MN 56520	X	
St. Francis Hospital Department of Radiology Shakopee, MN 55339	X	
St. Gabriels Hospital 815 S.E. 2nd Street Little Falls, MN 56345	X	

	Non-Shipper	Shipper
St. John's Hospital Department of Radiology 403 Maria Avenue St. Paul, MN 55106	X	
St. John's Hospital 4th and Jackson Red Wing, MN 55066	X	
St. Joseph Hospital 325 Garden Boulevard Mankato, MN 56001	X	
St. Joseph Hospital Radioisotope Laboratory 69 West Exchange Street St. Paul, MN 55102	X	
St. Joseph's Hospital 523 North Third Street Brainerd, MN 56401	X	
St. Luke's Hospital Radiology-Radiotherapy Department 915 East First Street Duluth, MN 55805	X	
St. Louis Park Medical Center 500 West 39th Street Minneapolis, MN 55416	X	
St. Mary's Hospital 407 East Third Street Duluth, MN 55805	X	
St. Mary's Hospital Department of Nuclear Medicine 2414 Seventh Street, South Minneapolis, MN 55454	X	

	Non-Shipper	Shipper
St. Mary's Hospital & Nursing Center Lincoln Avenue Detroit Lakes, MN 56501	X	
St. Olaf Hospital 908 First Drive, N.W. Austin, MN 55912	X	
St. Cloud State College Department of Chemistry Mathematics-Science Center St. Cloud, MN 56301	X	
St. John's University Department of Physics Collegeville, MN 56321	X	
St. Paul Fire & Marine Insurance Co. Environmental Services Analytical Laboratory Engineering Audit Department 385 Washington Street St. Paul, MN 55102	X	
St. Paul Radiology, P.A. 944 Lowry Medical Arts Building St. Paul, MN 55102	X	
St. Paul Ramsey Hospital and Medical Center Department of Radiology 640 Jackson Street St. Paul, MN 55101		X
St. Paul Technical Vocational Institute 235 Marshall Avenue St. Paul, MN 55102	X	
Samaritan Hospital Department of Radiology 1515 Charles Avenue St. Paul, MN 55104	X	

	Non-Shipper	Shipper
Serco Laboratories Room C-2 1931 West Country Road Roseville, MN 55113	X	
Sperry Univac Defense Systems Divison Univac Park, P.O. Box 3525 St. Paul, MN 55165		X
State of Minnesota Department of Agriculture Division of Laboratory Services 90 W. Plato Boulevard St. Paul, MN 55107	X	
State of Minnesota Bureau of Criminal Apprehension 1246 University Avenue St. Paul, MN 55104	X	
State of Minnesota Department of Natural Resources Division of Fisheries and Wildlife Ecological Services Chemical Laboratory Carlos Avery Game Farm Forest Lake, MN 55025	X	
Stewart & Walker, Inc. Consulting Engineers & Architects 324 East Second Street Thief River Falls, MN 56701	X	
Suburban Hennepin County Area Vocational - Technical Center South Campus, Natural Resources Dept. 9200 Flying Cloud Drive Eden Prairie, MN 55343	X	
Synergic Engineering Corporation 7613 Washington Avenue South Minneapolis, MN 55435	X	

	Non-Shipper	Shipper
Thermo-Systems, Inc. P.O. Box 3394 St. Paul, MN 55165	X	
Tri-County Memorial Hospital 418 Jefferson St. N. Wadena, MN 56482	X	
Twin City Shipyard, Inc. P.O. Box 43032 St. Paul, MN 55164	X	
Twin City Testing and Engineering Laboratory, Inc. 662 Cromwell Avenue St. Paul, MN 55114	X	
Twin Ports Testing, Inc. 1816 North Road Duluth, MN 55811	X	
United Hospitals, Inc. 333 North Smith Avenue St. Paul, MN 55102	X	
U.S. Bureau of Mines 5629 Minnehaha Avenue South Minneapolis, MN 55417	X	
U.S. Transformer, Inc. P.O. Box 206 Jordan, MN 55352	X	
United States Steel Corporation Minnesota Ore Operations P.O. Box 417 Mountain Iron, MN 55768	X	
Unity Hospital 550 Osborne Road Fridley, MN 55432	X	

	Non-Shipper	Shipper
University of Minnesota Boynton Health Service W-168 410 Church Street, S.E. Minneapolis, MN 55455		X
Veterans Administration Hospital Therapeutic Radiology Service 54th and 48th Avenue South Minneapolis, MN 55417		X
Virginia Regional Medical Center 901 Ninth Street North Virginia, MN 55792	X	
Waconia Ridgeview Hospital 500 South Maple Street Waconia, MN 55381	X	
West Bank Radiation Therapy Center 601 24th Avenue Minneapolis, MN 55454	X	
Western Lake Superior Sanitary District 27th Avenue West & Courtland Street Duluth, MN 55806	X	
Wolff Animal Hospital 9021 Penn Avenue South Minneapolis, MN 55431	X	
Worthington Regional Hospital Radiology Department-Laboratory Department 1016 Sixth Avenue Worthington, MN 56187	X	

APPENDIX C NRC REVIEW OF THE COMPACTS.

Central States Compact Review.

Midwest States Compact Review.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 2 8 1982

Mr. E. Frank Wilson, Director
Division of Environmental Health Protection
Arkansas Department of Health
4815 West Markham Street
Little Rock, AR 72201

Dear Mr. Wilson:

Thank you for your letter dated January 4, 1982 in which you requested our assistance and comments on the working draft (December 22, 1981) of the "Central Interstate Low-Level Radioactive Waste Compact."

We would like to congratulate the negotiators of the eligible party States of Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, North Dakota and Oklahoma who realized an excellent working draft within a short time frame.

There are five major areas of concern to us: (1) the scope of the compact, (2) State inspection and enforcement of NRC licensees, (3) the restriction on export of waste, (4) the settlement of disputes, and (5) inappropriate authority of the Compact Commission over NRC. They are discussed below.

1. The scope of the compact

In Article II there are several interlocking definitions that raise a question about the scope of the compact. "Facility" is defined as any site, location, structure or property used or to be used for the "management of waste." The latter term is defined as meaning the "storage," "treatment," or disposal of waste. "Storage" is defined as the holding of waste for treatment or disposal. "Treatment" is defined very broadly as any activity, including storage for decay, that results in a change in physical, chemical, or biological character of the wastes so that the waste can be safer for transport, amenable for recovery, recyclable, or reducible in volume. Thus, under the compact, a regional facility if it is "approved by the (Compact) Commission for the benefit of the party States" can be one established merely to hold waste for decay and recycle or recovery, since the central concept of Article III.a. of the compact is a regional facility to manage, not just dispose of, all waste generated in the region. Thus, in terms of the interlocking definitions and the central concept of Article III, the regional program suggested by the draft language goes far beyond "disposal" of low level waste into practically every aspect of low-level radioactive waste handling. Article III.g.3. also reinforces this view. It would require that a generator receive Compact Commission approval before moving any waste off the site of generation "for purposes of management" except to a regional facility.

Accordingly, the Compact Commission and its facilities would, under this compact, appear to be granted a monopoly on all low-level radioactive waste storage and treatment, as well as disposal, once the waste leaves the generator's site. Article III.g.3. also appears to have the effect of excluding waste brokers from operating in the region unless authorized by the Commission.

In our view the Low-Level Radioactive Waste Policy Act (P.L. 96-573) (Act) only provides authority to enter into regional interstate compacts limited to regional disposal facilities for low-level waste, as stated in Section 4(a)(2)(A). This section is the operative grant of authority to the States, and establishes the scope of the authority granted to the State under the Act. The State authority is further limited by the Act's definition of disposal as the "isolation" of low-level waste. Thus, we believe the better view of the Act is that its scope is limited to disposal, as commonly understood to be activities at the disposal site. The Act does not confer any additional authority over that which might already be obtained in a State with respect to generation of wastes, transportation, volume reduction activities at non-disposal sites, and similar activities that do not constitute disposal. Thus, even Article I, Policy and Purpose, which states that it is the policy of the Act to authorize compacts for the management of low-level radioactive waste goes beyond the words of the Act.

2. State inspection and enforcement of NRC licensees

Article III.e raises questions of the appropriateness of State inspection and enforcement activities of NRC licensees. We believe the onsite inspection of NRC licensees can be satisfactorily accommodated by an agreement between NRC and each of the States in the compact. Specifically, under section 274i of the Atomic Energy Act, NRC has the authority to enter agreements with States to perform inspections. We have drafted a proposed agreement (enclosed) which would authorize a State to inspect waste packaging on the premises of NRC licensees. Any State law enforcement based on findings from these inspections would be under State law, not under the Atomic Energy Act. A section 274i agreement is separate and distinct from the agreement entered into between NRC and a State under the "Agreement State" regulatory program; the latter is accomplished only by entering into an agreement under section 274b of the Atomic Energy Act. Of the States listed in Article VII, the States of Arkansas, Kansas, Louisiana, Nebraska and North Dakota are Agreement States. Iowa, Minnesota, Missouri and Oklahoma are not. In our view a 274i agreement can be entered into by a State whether or not it has a 274b agreement.

3. The restriction on export of waste

In Article III.g.2. there is a restriction on export of waste unless authorized by the Commission. The Low-Level Radioactive Waste Policy Act allows State restriction only on the import of out-of-region waste for disposal in a regional site. Although the economic motives underlying the restriction on export are understandable, the restriction goes beyond the terms of the Act, and could be viewed as an unauthorized and unconstitutional burden on interstate commerce. On the assumption that by 1986 all States will be included in regions with mutually reinforcing restrictions on importation we would question the need for a stated prohibition on export.

4. The settlement of disputes

Article IV.1. provides that a dispute between a party State and the Commission shall be reviewed in a U.S. Court of Appeals. The jurisdiction of the U.S. Courts of Appeals is limited to review of decisions from U.S. District Courts (28 U.S.C. 1291), and the final orders of selected Federal regulatory Commissions under the Hobbes Act (28 U.S.C. 2341). None of these statutes confer jurisdiction over the type of dispute referenced in the compact, i.e., between a State and a compact Commission. Nor does it appear that a question (i.e., a question of interpretation of the compact) of Federal law would necessarily be involved in the kinds of grievances a party State may have against the Commission acting under the compact or vice versa. Accordingly, it appears to us inappropriate to include Article IV.1. in the compact.

Analysis of the text of the compact indicates that a principal reason for needing a dispute review mechanism is the authority given the Commission to engage in a selection process when there is no volunteer host State, including requiring a selected host State to process an application. Yet a primary criterion for licensability of a site--State or federal ownership of the operating site--is not covered in the compact. Thus, except for sites located on federal land, any selected host State can effectively veto a site within its boundaries, even though it goes through the procedures of licensing (if an Agreement State) by refusing to accept title to the site. If NRC is licensing, the refusal to accept title makes the site per se unlicensable.

The need for "judicial" review of disputes between a party State and the Commission could be eliminated if the compact were revised so that it would be obligatory for a selected party State to be a host State when selected for the role by procedures incorporated in the compact. Then, if a party State refuses to perform its obligation under the compact, one or more of the other party States has a basis for taking action in the U.S. Supreme Court (28 U.S.C. 1251).

Apparently in lieu of making the host State selection obligatory, the draftsmen of the compact have chosen to provide a procedure for the Commission to revoke the membership of a party State that refuses to accept its selection as a host State, but only after a judicial review has found that the party State has arbitrarily or capriciously denied or delayed the issuance of a license. (See Article V.g.). This provision might well prove unworkable. It would be exceedingly difficult to show that State action is arbitrary or capricious if the State has any set of facts that reasonably support its action. In view of the complexity and uncertainty involved in siting, it is hard to imagine a State not being able to muster sufficient supporting facts to support its action or inaction.

5. Inappropriate authority of the Compact Commission over NRC

The authority given the Commission in Article V.e.2. to require the NRC to process all applications for permits and licenses for a selected site is inappropriate. No other body besides the Congress through new legislation can direct the NRC to do this.

Some other comments that may be helpful follow:

Article II. Definitions

1. Article II.b contains a definition of disposal which may make it difficult to distinguish disposal from storage. We recommend that the definition be amended to mean isolation of radioactive wastes from the biosphere by emplacement in a facility for burial in land.

2. Article II.k contains a definition of regional facility that is not consistent with Article V.f which provides Commission authority to select sites in the absence of volunteered sites. We recommend that the definition be amended on line 8 by inserting the words "or selected" after "approved."

3. Article II.o defines low-level radioactive wastes as "constituting radioactive nuclides in concentrations which exceed standards for unrestricted release..." This definition might serve to exclude certain low-level radioactive waste streams (such as liquid scintillation wastes) from burial in a regional disposal facility. This exclusion could pose a problem at a later time if there is a lack of capacity at hazardous waste facilities to dispose of such materials. Furthermore, the definition of waste might also potentially include naturally occurring and accelerator-produced radioactive materials (NARM) as waste in some States. If this is the intent, it should be made more explicit.

We believe that these ambiguities could be eliminated if the compact adhered to the definition of low-level radioactive waste as given in the Low-Level Radioactive Waste Policy Act (Public Law 96-573).

Article III. Rights and obligations

1. Article III.e, as it reads, implies varying and inconsistent regulations between host and party States, rather than regulations consistent with federal regulations. Accordingly, to clarify the issue, we suggest the deletion of the words "of host state" on the last line of Article III.e.

Article IV. The Commission

1. Article IV.m.3 authorizes the Compact Commission to hear and negotiate disputes which may arise between the party States regarding this compact. We suggest that this section be reworded to exclude regulatory disputes pertaining to health and safety issues.

2. This compact does not outline whether the party States are able to impose surcharges on waste generators to recover costs incurred for inspection, enforcement, and emergency response functions. Have you considered permitting party States to seek compensation from waste generators for performing these regulatory functions? (See Recommendations 3 and 7, "Report to the State Planning Council on Radioactive Management, Prepared by the Transportation Workshop, May 1, 1981.)

Article V. Development and operation of facilities

1. Article V.c.3 states that the Compact Commission is to review an application for a disposal facility based upon consideration of the applicant's financial assurances. Have you considered what types of financial assurances are being demanded of the applicant?

2. Article V.e.1 allows the Compact Commission to authorize the operator or operators whose proposal or proposals have been selected to pursue development following notification of each party State of the results of the preliminary selection process. This section could be interpreted to give the Compact Commission authority to authorize pre-licensing construction at the disposal site. Major construction before completion of licensing is prohibited currently by 10 CFR Part 51, and is a feature of proposed 10 CFR Part 61. The operator should have the authorization to develop necessary documentation, application and everything else necessary for licensing.

Article VI. Other laws and regulations

The following two comments are based on revisions of the State Planning Council model compact by the Midwest Compact Group.

1. Article VI.a.5 may be too restrictive because it deals with only judicial proceedings that should not be affected by the compact. You may want to consider administrative proceedings as well, e.g., licensing applications.

2. Lines 10 and 11 of Article VI.d appear to be vague. The words "restrict", "make more costly", or "inconvenient access" are subject to various kinds of interpretations. You may want to consider rewording these lines as follows: "or instrumentality thereof may be applied so as to discriminate against any regional..."

Article IX. Severability and Construction

1. Although this article is a verbatim copy of the model compact developed by the State Planning Council on Radioactive Waste Management, we believe that some additional clarification may be desireable. Accordingly, in line 2 after "declared" insert "by a court of competent jurisdiction..."

We continue to believe that the Central States are to be complimented for their work on compact formation. We look forward to working with you to achieve a successful conclusion of this compact effort.

Sincerely,

G. Wayne Kerr, Director
Office of State Programs

Enclosure:
Proposed 274i Agreement

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PROPOSED 2741 AGREEMENT

The State of _____ (State) is a member of the _____ Compact which was ratified by Congress on _____ pursuant to the Low-Level Radioactive Waste Policy Act, (Waste Policy Act) P.L. 96-573. The Waste Policy Act was enacted by Congress to provide for and encourage states to manage low-level radioactive waste on a regional basis, and to this end authorizes states to enter into such compacts as may be necessary to provide for the establishment and operation of regional disposal facilities for low-level radioactive waste. The _____ Compact contemplates that the State will make periodic unannounced inspections of the premises of low-level radioactive waste packaging and transport activities and areas of generators located within its borders if shipments of such waste are destined for a low-level waste facility located in a Compact state.

The United States Nuclear Regulatory Commission (NRC or Commission) has the statutory responsibility to inspect its licensees to determine compliance with NRC requirements, including requirements pertaining to the shipment, packaging and transportation of low-level radioactive waste. In the exercise of this responsibility, the Commission regularly conducts a review of the transportation programs of its licensees including the licensees' procedures for quality assurance, packaging, marking, labeling and loading of vehicles. This transportation program review usually has been found adequate to ensure licensee compliance with the Commission's regulations regarding low-level radioactive waste packaging and transportation without the need for Commission inspection of each individual shipment.

Under Section 274i. of the Atomic Energy Act of 1954, as amended, the Commission in carrying out its licensing and regulatory responsibilities under the Act is authorized to enter into agreements with any State to perform inspections or other functions on a cooperative basis as the Commission deems appropriate. While the Commission does not normally conduct on-site inspections of individual low-level waste shipments of its licensees, it desires to foster the goals of the Waste Policy Act and the _____ Compact.

Accordingly, this agreement between the State of _____ and the NRC establishes mutually agreeable procedures whereby the State may perform inspection functions for and on behalf of the Commission at certain NRC reactor and materials licensees' facilities which generate low-level radioactive waste.

It is hereby agreed between the Commission and the State as follows:

1. The Commission hereby authorizes the State to perform, for and on behalf of the Commission, the following functions with respect to low-level radioactive waste, as defined in Section 2(2) of the Waste Policy Act, in the possession of Commission licensees located within the State:

   a) Inspections to determine compliance with the Commission's rules and regulations regarding the packaging and transportation of

low-level waste destined for disposal at a commercial low-level radioactive waste disposal site, and

b) Notification of Commission licensees and the Commission in writing of any violation of Commission regulations disclosed by such inspections, and to request the licensees concerned to advise the State and the Commission of corrective action taken or to be taken.

The Commission will not evaluate the State's ability to perform such functions. Such functions as are performed by the State pursuant hereto shall be performed without cost or expense to the Commission.

2. The authority to inspect NRC licensees pursuant to the preceding paragraph is limited to the licensee's low-level waste packaging, packaging procedures, and transport vehicles.

3. In taking any action authorized hereunder, the State shall not undertake to amend or revoke Commission licenses. This agreement, however, shall not be construed to preclude the State from exercising any authority lawfully available to it under its own laws.

4. Efforts will be made by both parties to avoid duplicative enforcement action against an NRC licensee for the same violation. However, this is not meant to preclude appropriate complementary actions for the same

violation, such as termination of a user permit by the State and NRC enforcement action.

5. Nothing herein shall be deemed to authorize the State to inspect or otherwise enter the premises of any licensee of the Commission which is a Federal instrumentality without the prior consent of the licensee.

6. Nothing herein shall be deemed to preclude or affect in any manner the authority of the Commission to perform any or all of the functions described herein.

7. Nothing herein is intended to restrict or expand the statutory authority of NRC or the State or to affect or vary the terms of any agreement in effect under the authority of Section 274b. of the Atomic Energy Act of 1954, as amended.

8. Nothing herein shall be deemed to permit the State to impose packaging or transport standards beyond those contained in Federal standards.

9. The principal NRC contact under this agreement shall be (Regional Administrator). The principal State contact shall be _____.

10. This Agreement shall become effective upon signing by the _____, State of _____ and _____, Nuclear Regulatory Commission and shall remain in effect so long as the State remains a member of the _____ Compact unless sooner terminated by either party on thirty days prior written notice.

For the Nuclear Regulatory Commission

_____

For the State of _____

_____

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAR 12 1982

Professor William C. Taylor, Chairman
Department of Civil and Sanitary Engineering
College of Engineering
Michigan State University
East Lansing, MI 48824

Dear Professor Taylor:

Thank you for your letter dated February 1, 1982 in which you requested our review and comments on the working draft (January 11, 1982) of the "Midwest Interstate Compact on Low-Level Radioactive Waste."

We would like to congratulate the negotiators of the 16 eligible party States for developing an excellent working draft.

Also, I want to point out that the following comments take into account our staff's discussions with you at the winter meeting of the National Governors' Association, Monday, February 22, 1982.

There are four major areas of concern to us: (1) the scope of the compact, (2) the restriction on export of waste, (3) State inspection and enforcement of NRC licensees, and (4) the settlement of disputes. They are discussed below. Following this discussion are some other comments that may be helpful.

1. The scope of the compact

In Article II there are several interlocking definitions that support the policy of waste management as stated in Article I and thus raise a question about the scope of the compact. "Facility" is defined as a parcel of land or site which is used or is being developed for the "treatment", "storage", or "disposal" of low-level radioactive waste. "Storage" is defined as the holding of waste for treatment or disposal. "Treatment" is defined very broadly as any method, technique or process, including storage for decay, designed to change the physical, chemical or biological characteristics or composition of the waste to render such waste safer for transport, amenable for recovery, convertible to another usable material, or reducible in volume. Thus, under the compact, a regional facility, if it is approved by the Compact Commission for the benefit of the party States, can be one established merely to hold waste for decay and recycle or recovery. The central concept of the compact as described in Article V.b is that "each party State shall have the right to have all wastes generated within its borders managed at regional facilities." The emphasis is on managed not just disposal of all wastes generated in the region. Thus, in terms of the interlocking definitions and the central concept of Article V.b, the regional program suggested by the draft language goes far beyond "disposal" of low level waste into practically every aspect of low-level radioactive waste handling.

This policy of "waste management" is carried out by the Compact Commission in Article III. Article III.e describes the Commission authority to establish an advisory committee "on any and all matters pertaining to the management of waste." Article III.g.2 allows the Commission to "appear as an intervenor or party in interest before any court of law, federal, State or local agency, board or commission that has jurisdiction over the management of wastes." Article III.h.4 requires that the Commission "adopt a regional management plan which will designate host States for the establishment of needed regional facilities." The "regional management plan" guidelines are described in Article IV.

Of special concern to us is the fact that the Compact Commission may take on the aspects of a regional safety and environmental regulatory authority regarding all aspects of low-level radioactive waste management and therefore duplicate the authority of the host Agreement State and/or the NRC. There is no provision under Section 274b of the Atomic Energy Act for NRC's entering an agreement with an interstate board, but only with a State.

In our view the Low-Level Radioactive Waste Policy Act (P.L. 96-573) (Act) only provides authority to enter into regional interstate compacts limited to regional disposal facilities for low-level waste, as stated in Section 4(a)(2)(A). This section is the operative grant of authority to the States, and establishes the scope of the authority granted to the States under the Act. The State authority is further limited by the Act's definition of disposal as the "isolation" of low-level waste. Thus, we believe the better view of the Act is that its scope is limited to disposal, as commonly understood to be activities at the disposal site. The Act does not confer any additional authority over that which might already be obtained in a State with respect to generation of wastes, transportation, volume reduction activities at non-disposal sites, and similar activities that do not constitute disposal. Thus, Article I, Policy and Purpose, which states that it is the policy of the Act to authorize a compact for the management of low-level radioactive waste goes beyond the intent of the Act.

2. <u>The restriction on export of waste</u>

In Article III.g.1.(a), the Compact Commission is empowered to "enter into agreements with any person, State, or group of States for the right of access to regional facilities and for the right of access to facilities outside the region for wastes generated within the region." Article V.c states that "party States or generators may, subject to Commission approval pursuant to Article III, negotiate for the right of access to a facility outside the region." Article VIII.f states that "the consent given to this compact by the Congress shall extend ... to the power of the region to ban the exportation of waste pursuant to Article III." Finally, Article IX.b.3 states that "after January 1, 1986 it shall be a violation of this compact for any person to export from the region waste which is generated within the region."

The Low-Level Radioactive Waste Policy Act allows State restriction only on the import of out-of-region waste for disposal in a regional site. Although the economic motives underlying the restriction on export are understandable, the restriction goes beyond the terms of the Act, and could be viewed as an unauthorized and unconstitutional burden on interstate commerce. On the assumption that by 1986 all States will be included in regions with mutually reinforcing restrictions on importation, we would question the need for a stated prohibition on export.

3. State inspection and enforcement of NRC licensees

Article V.d raises questions of the appropriateness of State inspection and enforcement activities of NRC licensees. We believe the onsite inspection of NRC licensees can be satisfactorily accommodated by an agreement between NRC and each of the States in the compact. Specifically, under section 274i of the Atomic Energy Act, NRC has the authority to enter into agreements with States to perform inspections. We have drafted a proposed agreement (enclosed) which would authorize a State to inspect waste packaging on the premises of NRC licensees. Any State law enforcement based on findings from these inspections would be under State law, not under the Atomic Energy Act. A section 274i agreement is separate and distinct from the agreement entered into between NRC and a State under the "Agreement State" regulatory program; the latter is accomplished only by entering into an agreement under section 274b of the Atomic Energy Act. Of the States listed in Article VIII, the States of Kansas, Kentucky, Maryland, Nebraska, and North Dakota are Agreement States. Delaware, Illinois, Indiana, Iowa, Michigan, Missouri, Ohio, Minnesota South Dakota, Virginia and Wisconsin are not. In our view a 274i agreement can be entered into by a State whether or nor it has a 274b agreement.

4. The settlement of disputes

Article III.n of the compact provides for judicial review of disputes between the Commission and a party State in a U.S. Court of Appeals. The review provision is elaborate, containing both procedural and substantive rules to be applied by the reviewing court. We believe that, for the reasons discussed below, such a review provision in the compact is of questionable legal merit, and probably not necessary.

First, the long standing jurisdictional statutes applicable to Courts of Appeal limit their jurisdiction to review of decisions of U.S. District Courts (28 U.S.C. 1291) and the final orders of selected Federal Regulatory agencies (28 U.S.C. 2341, the Hobbs Act). These statutes do not confer original jurisdiction in the Courts of Appeal for adjudicating disputes among States involving interstate compacts. Rather, such cases have been seen as disputes subject to the original and exclusive jurisdiction of the U.S. Supreme Court under 28 U.S.C. 1251. See e.g., Arizona v. California 373 U.S. 546 (1963).

The U.S. Supreme Court has also viewed a Compact Commission as if it were a State. See Petty v. Tennessee-Missouri Bridge Comm. 359 U.S. 275 (1959). If that view continues, then a dispute between a party State and the Compact Commission could be, for jurisdictional purposes, a dispute among States and subject to the original and exclusive jurisdiction of the U.S. Supreme Court. On the other hand, if the Compact Commission is considered to be a private citizen for purposes of judicial review, then a dispute between it and a party State that involves a question of federal law (i.e., interpretation or application of the compact or ratifying legislation) belongs in a federal district court. Under either of these circumstances (which would appear to exhaust the universe of possible compact cases triable in the federal system) current jurisdictional statutes are adequate to provide for timely review, and there is no need for Article III.n in the compact.

The presence of Article III.n could also have a negative effect on ratification in the Congress. Compacts are reviewed in the Judiciary Committees of both Houses. These Committees also have legislative jurisdiction over federal court jurisdiction. Article III.n raises novel questions of Constitutional interpretation which those Committees will undoubtedly feel constrained to plumb in depth. It would be a disservice to the compact States to allow the compact ratification to become entangled in the resolution of an unnecessary problem. See California v. Arizona 440 U.S. 59 (1979) for a brief insight into the Constitutional problems that can arise when the original jurisdiction of the Supreme Court under Article III of the Constitution is involved.

Some other comments that may be helpful follow:

Article I. Policy and Purposes

1. Article I states that "the party States acknowledge and declare that 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 federal government or federal research and development activities."

   In the Low-Level Radioactive Waste Policy Act, the only kinds of low-level radioactive wastes excluded from consideration in low-level radioactive waste disposal are those wastes that originate as a result of defense activities of the U.S. Department of Energy or federal research and development activities. (This restriction is correctly stated in Article VII.a.7 of the Compact.) The Act is silent with regard to waste generated resulting from defense activities from the U.S. Department of Defense(DOD). Therefore, the policy as described in Article I of the Compact may be too broad in that States are not required to provide capacity for DOD wastes and is inconsistent with Article VII.a.7 of the Compact.

2. The last paragraph of Article I discusses items that are implicit in Congressional consent to the Compact and that are existing regulatory agency responsibilities. Have you considered placing this language in the suggested Congressional ratification bill in a separate section outside the compact language adopted by State legislatures?

Article II. Definitions

1. Some confusion in Article II.a for the definition of an "Agreement State" is eliminated by adding a few words as follows:

> "Agreement State" means any State with which the U.S Nuclear Regulatory Commission, or the U.S. Atomic Energy Commission, has entered into an effective agreement under subsection 274b of the Atomic Energy Act of 1954, as amended. (Underlining shows words added.)

2. Article II.t gives a definition of "transuranic wastes that incorporates a technical requirement of 10 nanocuries per gram of waste that is derived from a physical detection limit that is under review by the U.S. Nuclear Regulation Commission in connection with the proposed rule 10 CFR Part 61. We believe that such technical standards should not be codified in legislation because changes would require action by the States and the Congress. A more appropriate place for the discussion of the technical cutoff requirement for transuranic wastes is in regulations. Accordingly, we suggest that you alter the definition as follows:

> "Transuranic waste" means waste material containing transuranic elements with contamination levels as determined by the regulations of: (1) the U.S. Nuclear Regulatory Commission, or (2) the host State, if it is an Agreement State, for equal or more stringent levels.

Article III. the Commission

1. Article III.h.3 authorizes the Compact Commission to hear and negotiate disputes which may arise between the party States regarding this compact. We suggest that this section be reworded to exclude regulatory disputes pertaining to health and safety issues, which should be resolved by the licensing authority.

2. This compact does not outline whether the party States are able to impose surcharges on waste generators to recover costs incurred for inspection, enforcement, and emergency response functions. Have you considered permitting party States to seek compensation from waste generators for performing these regulatory functions? (See Recommendations 3 and 7, "Report to the State Planning Council on Radioactive Management, Prepared by the Transportation Workshop, May 1, 1981.)

Article VI. Development and Operation of Facilities

1. Article VI.f says that "to the extent authorized by federal law, a host State shall regulate and license any facility within its borders and ensure the extended care of such facility." This section may appear to mandate that host States become Agreement States under Section 274b of the Atomic Energy Act of 1954, as amended. The U.S. Nuclear Regulatory Commission (NRC) discontinues regulatory authority only when the Agreement State has enacted its own State laws and promulgated its own regulations that are compatible with those of the NRC and entered into an Agreement with NRC. Therefore, we recommend that you change the first phrase to read: "to the extent authorized by federal and State law,... (Underlining indicates the added wording.)

2. Article VI.h. uses the improper gender designation for the host State. We recommend that the neuter gender "its" be substituted for "his" on line 10, page 17.

We continue to believe that the Midwest States are to be complimented for their work on compact formation. We look forward to working with you to achieve a successful conclusion of this effort.

Sincerely,

G. Wayne Kerr

G. Wayne Kerr, Director
Office of State Programs

Enclosure:
Proposed 274i Agreement

MICHIGAN STATE UNIVERSITY

COLLEGE OF ENGINEERING
DEPARTMENT OF CIVIL AND SANITARY ENGINEERING

EAST LANSING · MICHIGAN · 48824

February 1, 1982

G. Wayne Kerr, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Wayne:

Representatives from 16 states stretching from Maryland and Virginia on the east to Iowa, Nebraska and Kansas on the west, have been negotiating a mid-west compact for disposal of low-level radioactive waste. We plan to have a final meeting of this committee on February 9 to ratify this compact. It is our intent to then introduce the compact into the various state legislatures for committee hearings and debate. Following this process, a final meeting of the committee will be held to determine whether any modifications to the compact will be made based on these legislative comments.

In addition to comments which we expect to surface during the legislative hearings, we are definitely interested in the response of the Nuclear Regulatory Commission to our compact. We would appreciate your review of this compact, and your comments (by February 9 if possible) for our consideration. While the February 9 date is desirable, we can accommodate comments after this date if your review cannot be completed in that time frame. I realize the time permitted for your review and comments is limited, but we would appreciate any efforts necessary to meet this deadline. A telephone call giving us your comments would be satisfactory if there is insufficient time to receive the message by mail. If I can help clarify any issues, please call me at 517/355-5107. Thanks for your consideration.

Very truly yours,

William C. Taylor, Professor and Chairman
Department of Civil and Sanitary Engineering

WCT/mw

Encl.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PROPOSED 274i AGREEMENT

The State of _____ (State) is a member of the _____ Compact which was ratified by Congress on _____ pursuant to the Low-Level Radioactive Waste Policy Act, (Waste Policy Act) P.L. 96-573. The Waste Policy Act was enacted by Congress to provide for and encourage states to manage low-level radioactive waste on a regional basis, and to this end authorizes states to enter into such compacts as may be necessary to provide for the establishment and operation of regional disposal facilities for low-level radioactive waste. The _____ Compact contemplates that the State will make periodic unannounced inspections of the premises of low-level radioactive waste packaging and transport activities and areas of generators located within its borders if shipments of such waste are destined for a low-level waste facility located in a Compact state.

The United States Nuclear Regulatory Commission (NRC or Commission) has the statutory responsibility to inspect its licensees to determine compliance with NRC requirements, including requirements pertaining to the shipment, packaging and transportation of low-level radioactive waste. In the exercise of this responsibility, the Commission regularly conducts a review of the transportation programs of its licensees including the licensees' procedures for quality assurance, packaging, marking, labeling and loading of vehicles. This transportation program review usually has been found adequate to ensure licensee compliance with the Commission's regulations regarding low-level radioactive waste packaging and transportation without the need for Commission inspection of each individual shipment.

Under Section 274i. of the Atomic Energy Act of 1954, as amended, the Commission in carrying out its licensing and regulatory responsibilities under the Act is authorized to enter into agreements with any State to perform inspections or other functions on a cooperative basis as the Commission deems approriate. While the Commission does not normally conduct on-site inspections of individual low-level waste shipments of its licensees, it desires to foster the goals of the Waste Policy Act and the _____ Compact.

Accordingly, this agreement between the State of _____ and the NRC establishes mutually agreeable procedures whereby the State may perform inspection functions for and on behalf of the Commission at certain NRC reactor and materials licensees' facilities which generate low-level radioactive waste.

It is hereby agreed between the Commission and the State as follows:

1. The Commission hereby authorizes the State to perform, for and on behalf of the Commission, the following functions with respect to low-level radioactive waste, as defined in Section 2(2) of the Waste Policy Act, in the possession of Commission licensees located within the State:

   a) Inspections to determine compliance with the Commission's rules and regulations regarding the packaging and transportation of

low-level waste destined for disposal at a commercial low-level radioactive waste disposal site, and

b) Notification of Commission licensees and the Commission in writing of any violation of Commission regulations disclosed by such inspections, and to request the licensees concerned to advise the State and the Commission of corrective action taken or to be taken.

The Commission will not evaluate the State's ability to perform such functions. Such functions as are performed by the State pursuant hereto shall be performed without cost or expense to the Commission.

2. The authority to inspect NRC licensees pursuant to the preceding paragraph is limited to the licensee's low-level waste packaging, packaging procedures, and transport vehicles.

3. In taking any action authorized hereunder, the State shall not undertake to amend or revoke Commission licenses. This agreement, however, shall not be construed to preclude the State from exercising any authority lawfully available to it under its own laws.

4. Efforts will be made by both parties to avoid duplicative enforcement action against an NRC licensee for the same violation. However, this is not meant to preclude appropriate complementary actions for the same

violation, such as termination of a user permit by the State and NRC enforcement action.

5. Nothing herein shall be deemed to authorize the State to inspect or otherwise enter the premises of any licensee of the Commission which is a Federal instrumentality without the prior consent of the licensee.

6. Nothing herein shall be deemed to preclude or affect in any manner the authority of the Commission to perform any or all of the functions described herein.

7. Nothing herein is intended to restrict or expand the statutory authority of NRC or the State or to affect or vary the terms of any agreement in effect under the authority of Section 274b. of the Atomic Energy Act of 1954, as amended.

8. Nothing herein shall be deemed to permit the State to impose packaging or transport standards beyond those contained in Federal standards.

9. The principal NRC contact under this agreement shall be (Regional Administrator). The principal State contact shall be _____.

10. This Agreement shall become effective upon signing by the _____, State of _____ and _____, Nuclear Regulatory Commission and shall remain in effect so long as the State remains a member of the _____ Compact unless sooner terminated by either party on thirty days prior written notice.

For the Nuclear Regulatory Commission

_____

For the State of _____

_____

APPENDIX D LOW-LEVEL RADIOACTIVE WASTE LEGISLATION PASSED BY INDIVIDUAL STATES.

Texas Low-Level Radioactive Waste Act.

Kansas legislation enacting the Central States Compact.

Nebraska's legislative resolution supporting the Central States Compact.

PUBLIC LAW 96-573 [S. 2189]: December 22, 1980

LOW-LEVEL RADIOACTIVE WASTE POLICY ACT

For Legislative History of Act, see Pamphlet No. 12D

An Act to set forth a Federal policy for the disposal of low-level radioactive wastes, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Low-Level Radioactive Waste Policy Act".

DEFINITIONS

SEC. 2. As used in this Act—

(1) The term "disposal" means the isolation of low-level radioactive waste pursuant to requirements established by the Nuclear Regulatory Commission under applicable laws.

(2) The term "low-level radioactive waste" means radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11 e. (2) of the Atomic Energy Act of 1954.

(3) The term "State" means any State of the United States, the District of Columbia, and, subject to the provisions of Public Law 96-205, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and any other territory or possession of the United States.

(4) For purposes of this Act the term "atomic energy defense activities of the Secretary" includes those activities and facilities of the Department of Energy carrying out the function of—

(i) Naval reactors development and propulsion,

(ii) weapons activities, verification and control technology,

(iii) defense materials production,

(iv) inertial confinement fusion,

(v) defense waste management, and

(vi) defense nuclear materials security and safeguards (all as included in the Department of Energy appropriations account in any fiscal year for atomic energy defense activities).

GENERAL PROVISIONS

SEC. 3. (a) Compacts established under this Act or actions taken under such compacts shall not be applicable to the transportation, management, or disposal of low-level radioactive waste from atomic energy defense activities of the Secretary or Federal research and development activities.

(b) Any facility established or operated exclusively for the disposal of low-level radioactive waste generated by atomic energy defense activities of the Secretary or Federal research and development

activities sh 'l not be subject to compacts established under this Ac
or actions to en under such compacts.

LOW-LEVEL RADIOACTIVE WASTE DISPOSAL

SEC. 4. (a)(1) It is the policy of the Federal Government thar-

(A) each State is responsible for providing for the availabilit of capacity either within or outside the State for the disposal c low-level radioactive waste generated within its borders excep for waste generated as a result of defense activities of th Secretary or Federal research and development activities; an

(B) low-level radioactive waste can be most safely an efficiently managed on a regional basis.

(2)(A) To carry out the policy set forth in paragraph (1), the State may enter into such compacts as may be necessary to provide for th establishment and operation of regional disposal facilities for lov level radioactive waste.

(B) A compact entered into under subparagraph (A) shall not tak effect until the Congress has by law consented to the compact. Eac such compact shall provide that every 5 years after the compact ha taken effect the Congress may by law withdraw its consent. Afa January 1, 1986, any such compact may restrict the use of th regional disposal facilities under the compact to the disposal of lov level radioactive waste generated within the region.

(b)(1) In order to assist the States in carrying out the policy set fort in subsection (a)(1), the Secretary shall prepare and submit t Congress and to each of the States within 120 days after the date o the enactment of this Act a report which—

(A) defines the disposal capacity needed for present and futu low-level radioactive waste on a regional basis;

(B) defines the status of all commercial low-level radioacti waste disposal sites and includes an evaluation of the licen status of each such site, the state of operation of each sit including operating history, an analysis of the adequacy disposal technology employed at each site to contain low-lev radioactive wastes for their hazardous lifetimes, and such recor mendations as the Secretary considers appropriate to assu protection of the public health and safety from wastes tran ported to such sites;

(C) evaluates the transportation requirements on a region basis and in comparison with performance of present transport tion practices for the shipment of low-level radioactive waste including an inventory of types and quantities of low-lev wastes, and evaluation of shipment requirements for each type waste and an evaluation of the ability of generators, shipper and carriers to meet such requirements; and

(D) evaluates the capability of the low-level radioactive was disposal facilities owned and operated by the Department Energy to provide interim storage for commercially generat low-level waste and estimates the costs associated with su interim storage.

ablished under this Act

DISPOSAL

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(2) In carrying out this subsection, the Secretary shall consult with the Governors of the States, the Nuclear Regulatory Commission, the Environmental Protection Agency, the United States Geological Survey, and the Secretary of Transportation, and such other agencies and departments as he finds appropriate.

Session of 1982

HOUSE BILL No. 2809

By Committee on Energy and Natural Resources

2-2

AN ACT entering into the central interstate low-level radioactive waste compact.

Be it enacted by the Legislature of the State of Kansas:

Section 1. The central interstate low-level radioactive waste compact is hereby entered into and enacted into law in the form substantially as follows:

ARTICLE I. POLICY AND PURPOSE

The party states recognize that each state is responsible for the management of its nonfederal low-level radioactive wastes. They also recognize that the Congress, by enacting the *Low-Level Radioactive Waste Policy Act* (P.L. 96-573) has authorized and encouraged states to enter into compacts for the efficient management of wastes. It is the policy of the party states to cooperate in the protection of the health, safety and welfare of their citizens and the environment and to provide for and encourage the economical management of low-level radioactive wastes. It is the purpose of this compact to provide the framework for such a cooperative effort; to promote the health, safety and welfare of the citizens and the environment of the region; to limit the number of facilities needed to effectively and efficiently manage low-level radioactive wastes and to encourage the reduction of the generation thereof; and to distribute the costs, benefits and obligations among the party states.

ARTICLE II. DEFINITIONS

As used in this compact, unless the context clearly requires a different construction:

a. "Commission" means the Central Interstate Low-Level Radioactive Waste Commission;

b. "disposal" means the isolation and final disposition of

natural resources;

(8) a member of the house committee on energy and natural resources, designated by the house minority leader.

The director of the legislative research department or a designee of such director, and the revisor of statutes or a designee of such revisor shall assist the advisory board.

New Sec. 3. For purposes of article III of the central interstate low-level radioactive waste compact, the state corporation commission is hereby designated as the rate-review agency for the state of Kansas.

Sec. 4. K.S.A. 1981 Supp. 65-3435 is hereby amended to read as follows: 65-3435. The board shall not approve any application for a hazardous waste disposal facility permit unless the applicant has a deed to the property where the facility is to be located, in fee simple absolute, free of any liens, easements, covenants, or any other encumbrances on the title, or, if the application is for a radioactive hazardous waste disposal facility license, the requirements of K.S.A. 1981 Supp. 65-3449 have been met and the state has entered into and enacted an interstate compact which regulates the ~~transportation, storage and disposal~~ *management* of low-level radioactive waste.

For the purposes of this section, the state has not entered into an interstate compact until such compact becomes effective by its own terms.

Sec. 5. This act shall take effect and be in force from and after its publication in the statute book.

HOUSE BILL No. 2810

By Committee on Energy and Natural Resources

2-2

AN ACT relating to low-level radioactive waste; concerning the central interstate low-level radioactive waste compact; amending K.S.A. 1981 Supp. 65-3435, and repealing the existing section.

Be it enacted by the Legislature of the State of Kansas:

New Section 1. The member of the central interstate low-level radioactive waste commission representing the state of Kansas shall be the secretary of the department of health and environment. The director of the division of environment of the department of health and environment shall act as alternate to the secretary.

New Sec. 2. (a) The advisory board on low-level radioactive waste is hereby established. Such board shall consult with and advise the state's representative to the compact commission concerning technical and policy matters.

(b) Such advisory board shall consist of:

(1) The secretary of the department of health and environment, who shall serve as chairperson;

(2) the director of the division of environment of the department of health and environment;

(3) the director of the bureau of radiation control of the department of health and environment;

(4) a representative of the governor's office, designated by the governor;

(5) the chairperson of the senate committee on energy and natural resources;

(6) a member of the senate committee on energy and natural resources, designated by the senate minority leader;

(7) the chairperson of the house committee on energy and

The remaining text of the bill is the same as the Central States Compact language.

LEGISLATIVE RESOLUTION 233

Introduced by Senator Schmit
Passed 36-0 March 8, 1982

WHEREAS, Nebraska has responsibilities regarding management and disposal of low-level radioactive waste generated by nonfederal activities within its borders; and

WHEREAS, one of the major options under which low-level radioactive waste can be safely and efficiently managed and disposed of on a regional basis is through legislation relating to regional interstate compacts; and

WHEREAS, Nebraska representatives have met and negotiated with two groups of states in the development of such compact legislation which groups included the Mid-West Compact Group of Delaware, Maryland, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, North Dakota, Oklahoma, South Dakota, Virginia, and Wisconsin, and the Central Interstate Group of Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, North Dakota, and Oklahoma; and

WHEREAS, the Low-Level Radioactive Waste Policy Act, P.L. 96-573, authorizes compact regions to restrict the use of disposal facilities to waste generated within the region by January 1, 1986; and

WHEREAS, in order for Nebraska to provide a facility for its generators of low-level radioactive waste, it is necessary that compact legislation be introduced by the next legislative session supporting one of the two groups of states Nebraska has been negotiating with; and

WHEREAS, Nebraska can more readily identify with the states comprising the Central Interstate Group because of similarities in geographic location and the volume of low-level waste generated by each central state; and

WHEREAS, Nebraska's eligibility to join the Central Interstate Group terminates on January 1, 1984.

NOW, THEREFORE, BE IT RESOLVED BY THE MEMBERS OF THE EIGHTY-SEVENTH LEGISLATURE, SECOND SESSION:

1. That the Legislature urges the State of Nebraska to align itself with a group of states for the proper management of low-level radioactive waste.

2. That the State of Nebraska declares it will join the Central Interstate Group and support compact legislation during its next legislative session.

APPENDIX E NUCLEAR REGULATORY LOW-LEVEL RADIOACTIVE WASTE SITING REGULATIONS.

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 61, 70, 73 and 170

Licensing Requirements for Land Disposal of Radioactive Waste

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed Rule.

SUMMARY: This notice invites public comment on proposed amendments to the Commission's rules to provide specific requirements for licensing the land disposal of radioactive wastes. The proposed amendments set forth performance objectives for disposal, general requirements for land disposal of radioactive waste, technical requirements for disposal of radioactive waste into near-surface disposal facilities, requirements for submitting applications for licenses authorizing such activities and procedures which the Commission will follow in the issuance of such licenses. The rule does not deal with disposal by individual licensees by burial of their own wastes. The proposed amendments also set forth provisions for consultation and participation in license reviews by State governments and Indian tribes. Further amendments are proposed governing the transfer of licensed material for disposal. The proposed requirements respond to the needs and requests of the public, Congress, industry, the states, the Commission, and other Federal agencies for codification of regulations for the dispoal of low-level radioactive waste.

DATE: Comment period expires October 22, 1981. Comments received after October 22, 1981 will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESS: All interested persons who desire to submit written comments in connection with the proposed amendments should send them to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555, Attention: Docketing and Service Branch. Copies of comments received on the proposed amendments may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: R. Dale Smith, Chief, Low-Level Waste Licensing Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 427–4433.

SUPPLEMENTARY INFORMATION:

I. Description of the Proposed Action

The U.S. Nuclear Regulatory Commission proposes to add to its rules in 10 CFR a new Part 61 to provide licensing procedures, performance objectives, and technical criteria for licensing facilities for the land disposal of radioactive waste. Specifically, the regulations would establish performance objectives for land disposal of waste; technical requirements for the siting, design, operations, and closure activities for a near surface disposal facility; technical requirements concerning the waste form that waste generators must meet for the land disposal of waste; classification of waste; institutional requirements; and administrative and procedural requirements for licensing a disposal facility. Amendments to other parts of 10 CFR are proposed to govern the certification and use of shipping manifests to track waste shipments and clarify, but not substantially modify, the requirements of existing regulations. Specific requirements for licensing facilities for the disposal of radioactive wastes by alternative land disposal methods will be proposed for Part 61 in subsequent rulemakings. Disposal of radioactive wastes by an individual licensee will continue to be governed by 10 CFR Part 20.

Part 61 defines which wastes are acceptable for disposal by near-surface disposal methods (and which wastes are not acceptable and must be disposed of by other methods). It also sets out the administrative and procedural requirements for licensing a facility for the land disposal of waste.

II. Need for the Proposed Action

Current general regulations for licensing materials do not contain any technical standards or criteria for the disposal of licensed materials. However, the need for comprehensive, national standards and technical criteria for the disposal of radioactive waste is well documented. The Commission has undertaken a program to establish such standards and criteria through this proposed rulemaking action.

III. Background

The Commission has had a program underway for several years to develop regulations and other guidance for the management and disposal of low-level waste (LLW). On October 25, 1978, the Commission published an Advance Notice of Proposed Rulemaking (43 FR 49811) regarding the development of specific regulations for the disposal of LLW. The development of these regulations was in response to needs and requests expressed by the public, the Congress, industry, the States, the Commission, and other Federal agencies for codification of regulations for the disposal of LLW. To provide guidance and support for developing the new regulation, 10 CFR Part 61, the Commission has prepared a draft environmental impact statement (EIS) NUREG–0782.[1] The statement is not a generic EIS on the disposal of LLW. Rather, it is a decision document that has been prepared to provide a basis for decisions on the performance objectives and technical and financial criteria set out in Part 61. As part of the process to scope the form and content of the EIS and the proposed regulation, the advance notice asked for advice, recommendations, and comments on the scope and content of the EIS and the regulation. As a part of this advance notice, the Commission announced its intention to:

- Develop technical criteria and standards for the disposal of LLW by shallow land burial and alternative disposal methods.
- Prepare a supporting EIS for the regulation.
- Coordinate development of technical criteria and standards for shallow land burial and alternative disposal methods with requirements for the classification of waste (Define the concentrations and quantities of waste acceptable for disposal by various disposal methods).

[1] Single copies of this report will be available free upon publication to the extent of supply and may be obtained by written request to the Director, Division of Technical Information and Document Control, Washington, D.C. 20555. Copies will also be made available for inspection or copying for a fee at the NRC Public Document Room, 1717 H Street NW., Washington, D.C.

The Commission received a total of 36 responses from the public on the advance notice. These comments have been docketed (Docket No. PR–61) and may be examined in the Commission's Public Document Room located at 1717 H Street NW., Washington, D.C. A detailed analysis by the Commission of the public responses received may also be examined in the Public Document Room. The respondents to the advance notice strongly supported the Commission's development of specific criteria and standards for the disposal of low-level waste. There was also support among the commenters that an overall EIS should be prepared to provide an essential part of the informational and decisional base for the development of the criteria and standards for the rulemaking action. However, the commenters were divided on the form and structure of the criteria and standards. Some commenters stated that the criteria and standards should be minimal and basic and should emphasize the performance objectives to be met by low-level waste disposal facilities. Others suggested the criteria and standards should be specific and detailed. Many commenters also stated that as part of the development of LLW disposal standards and criteria a system was needed for classifying or segregating the waste based on hazard.

A number of comments were received on the Commission's questions regarding alternative disposal methods to shallow land burial. Although the comments in this area were mixed, the most often expressed opinion was that primary consideration should be given to developing requirements for shallow land burial and emplacement of waste into mined cavities. Disposal of wastes in ocean waters was given the lowest priority. Four commenters felt there was no need to establish a priority list of the alternative disposal methods to shallow land burial. The most often expressed disadvantage of any alternative method was the potential for increased cost. Approximately 60 percent of the respondents suggested other potentially viable methods for low-level waste treatment and/or disposal. The methods most frequently mentioned were volume reduction and other advanced processing techniques.

The comments received by the Commission on the advance notice were used by the Commission in scoping the form and content of the EIS and the regulation. For this scoping process, the Commission also considered a numbr of other sources, including:

- The results of program studies and other technical data on LLW management and disposal;
- Licensing experience with current LLW disposal sites and current LLW management techniques;
- Programs by the Environmental Protection Agency (EPA) to develop criteria and standards for LLW management and regulations for disposal of nonradio-active solid and chemically hazardous wastes;
- Recommendations of the Interagency Review Group on Nuclear Waste Management;
- Natural Resources Defense Council (NRDC) Petition for Rulemaking (PRM 20–7);
- Discussions with industry and public interest groups, State and Federal agencies, and others;
- Recommendations from the State Planning Council; and
- Public Law 96–573, "Low-Level Radioactive Waste Policy Act."

On February 28, 1980, the Commission also published a Notice of Availability of a preliminary draft regulation, dated November 5, 1979, announcing availability of the draft for public review and comment to help ensure wide distribution and early public review and comment (45 FR 13104). Copies of this draft regulation were distributed to all of the States. The comments received in response have been docketed (Docket No. PR–61) and may be examined in the Commission's Public Document Room located at 1717 H Street NW., Washington, D.C.

During the summer and fall of 1980, the Commission also sponsored 4 regional workshops to provide an opportunity for open dialogue among representatives of the States, public interest groups, the industry, and others on the issues to be addressed through the Part 61 rulemaking. One workshop was conducted by the Southern States Energy Board for the southeast region, a second by the Western States Energy Board for the west, a third by the Midwestern Regional Office of the Council of State Governments for the central region and midwest, and a fourth by the New England Regional Commission for the northeast. These workshops were particularly useful in formulating our positions on the more judgmental aspects of the rule and underlying assumptions (such as the length of time we should assume that active governmental controls could reasonably be relied on). A copy of the full transcript for each meeting and a summary report documenting the collective views of the participants has been placed in the docket for this rulemaking (Docket No PR–61) and may be examined at the Commission's Public Document Room located at 1717 H Street NW., Washington, D.C.

IV. Purpose and Scope of Part 61

It is the purpose of Part 61 to establish technical criteria and procedures for licensing facilities for the land disposal of radioactive wastes. Part 61 will not apply to alternative disposal methods such as deep space or ocean disposal. It is not practicable to develop one regulation dealing with such a wide variety in disposal technologies. Requirements for ocean disposal are a responsibility of the EPA. Space disposal, although technically feasible, is not developed to the point of routine, economic application.

The recently enacted Low-Level Radioactive Waste Policy Act (Pub. L. 96–573) sets forth a traditional definition of "low-level radioactive waste," i.e., radioactive waste not classified either as high-level radioactive waste, transuranic waste, spent nuclear fuel, or uranium mill tailings (byproduct material as defined in section 11 e.(2) of the Atomic Energy Act of 1954). While Part 61 is intended to deal with the disposal of most wastes included in this definition, the waste classification scheme that forms the basis for Part 61 has identified some "low level radioactive wastes" that are not suitable for disposal by the means that Part 61 provides, and alternative methods will have to be used. Therefore, the term "low-level radioactive waste" is not used in Part 61. Reference is made to "waste" and "radioactive wastes" which, within the context of Part 61, refers to those wastes that are acceptable for disposal under the provisions of Part 61.

This proposed regulation includes overall performance objectives expected in any type of land disposal and technical requirements for the disposal of waste near the surface. The technical requirements for disposal are set forth for disposal site characteristics, disposal site design and near-surface disposal facility operations, classification and characteristics of wastes, and institutional control and surveillance.

V. Summary of Rule

The following sections provide a discussion of the major provisions of Part 61.

A. Performance Objectives Versus Prescriptive Requirements

In developing Part 61, the Commission has considered two basic approaches: a performance objective approach and a

prescriptive approach. A regulation o[illegible]ed toward performance objectives would establish the overall objectives to be achieved in waste disposal and would leave flexibility as to how the objectives would be achieved.

In the latter approach, specific detailed requirements for design and operation of a land disposal facility would be set out in the regulations. Prescriptive standards would specify the particular practices, designs, or methods to be employed—for example, the thickness of the cover material (the cap) over a land disposal trench, or the maximum slope of the trench walls.

Setting of prescriptive standards requires a considerable amount of detailed knowledge about potential designs, techniques, and procedures for disposing of wastes in order to prescribe which designs, techniques, and procedures are among the best and would assume that the state of art in waste disposal is developed to the point where there are clear choices to be made among all the potential approaches.

A combination of approaches has been chosen for Part 61. Overall performance objectives are stated and the applicant has flexibility in choosing d[illegible]gn features and operating practices t[illegible]hieve these objectives. There are some prescriptive requirements that have been judged necessary in light of past operating experience with disposal facilities. To the extent practicable, these requirements are stated as minimum criteria to afford some flexibility in meeting them.

B. Development of Performance Objectives

With respect to the performance objectives, the Commission's overall goal is to assure protection of the public health and safety. In considering radioactive waste disposal, attainment of this goal would appear to fall into two time frames: the short-term operational phase and the long term after operations cease.

In the short term, the concern is for protection of workers and the general population during operation of a disposal facility.

Protection of the public health and safety over the long term is most important and long-term performance of the land disposal facility after operations cease should be given greater emphasis than short-term considerations and conveniences. It is therefore at the [illegible] of the land disposal facility closure [illegible] greatest reliance will be placed on the disposal site characteristics and design as well as the waste characteristics to assure protection of the public health and safety without the need for continued active care and maintenance.

Assuring safety over the long term involves three considerations: (1) protection of individuals from inadvertent intrusion into the site and coming in contact with the waste at some point in the future; (2) protection of the general public from potential releases to the environment; and (3) stability of the disposed waste and the site to eliminate the need for ongoing maintenance of the site following closure.

Safety During Operations. The short-term performance objective included in Subpart C of Part 61 will be to assure that the disposal facility will be operated in conformance with the same Commission standards for radiation protection set out in 10 CFR Part 20 that are applied to all Commission licensees for protection of workers (See § 61.43.)

Protection of the Inadvertent Intruder. The Commission believes that intentional intrusion into the land disposal facility (e.g., an archaeologist reclaiming artifacts) cannot reasonably be protected against. However, after the land disposal facility closes, and after active institutional control and surveillance over the disposal site have been removed, one or a few individuals could inadvertently disturb waste in the disposal site through activities such as construction of a house or by farming.

Actual intrusion into the waste may never occur; but, for purposes of Part 61, it has been assumed that intrusion could occur, in which case the one or few such individuals should not receive an unacceptable radiation exposure. The Commission is applying a 500 mrem/yr maximum individual exposure limit for this unusual case. This limit is based on ICRP recommendations for dose limits to individuals and is a level that is recognized as providing adequate protection. Since only one, or at most a few, persons would be involved, it is not necessary to consider a population dose. This limit is then used to determine the allowable concentrations of nuclides in each class of waste. (See § 61.42.)

Protection of the Environment. The primary long-term pathway of release of radioactivity from near-surface disposal involves radionuclide contamination of and transport through the ground water. Presently there exists no specific numerical standard for protection of the ground water. The Environmental Protection Agency (EPA), under its generally applicable environmental standards-setting authority, has responsibility to prepare a standard that will set limits for releases of radioactivity to the general environment from disposal facilities. After examining other existing standards, the Commission does not anticipate that the standard will be much higher than the standards already established for releases to the environment from fuel cycle facilities set out in 40 CFR Part 190 (25 mrem/yr whole-body exposure). Also, the standard will probably not be any lower than the limits established in 40 CFR Part 141 for concentrations of radioactivity in drinking water (4 mrem/yr whole body exposure). As a part of the EIS for Part 61, the Commission analyzed a range of limits from 1 mrem/yr to 25 mrem/yr applied at various locations at and in the vicinity of a disposal facility. Based on the numerical limits already set for existing standards and this analysis, the Commission has selected an objective that requires that any movement of radioactivity not result in calculated doses exceeding 25 mrem/yr to an individual at the site boundary or cause the EPA Drinking Water Standards (40 CFR Part 141) to be exceeded at the nearest public drinking water supply (See § 61.41). When EPA standards are effective, licensees will have to comply with them. Because these standards are specific to land disposal of radioactive waste, they are included in Part 61 rather than 10 CFR Part 20.

C. Minimum Technical Requirements

To help assure that the performance objective will be met, minimum requirements will be placed on the various parts of an overall disposal "system".

The principal parts of an overall disposal system that are readily identifiable and will be addressed in the minimum technical requirements are:

- The characteristics of the disposal site into which the waste is placed;
- The method by which the disposal site is designed, the land disposal facility constructed, the waste emplaced, and the disposal site closed;
- The characteristics of the waste; and
- The degree and length of institutional control, surveillance, and monitoring of the disposal site after closure.

Disposal Site Suitability Requirements. A wide range of locations are potentially available for use as a near-surface disposal facility ranging from the humid east to the arid west. The approach the Commission has followed in establishing the disposal site suitability requirements has been to establish a common-sense base of disposal site evaluation factors that can be consistently applied throughout the country. The requirements would essentially eliminate certain limited

areas from consideration because of undesirable characteristics but would leave large areas in each region where acceptable sites could be found (see § 61.50). The requirements are intended to eliminate, to the extent practicable, those areas with certain characteristics that are known to lead to or have high potential to lead to problems over the long term (e.g., flooding or rapid erosion of the site). These disposal site characteristics include:

(1) Complexity—The disposal site must be capable of being investigated and analyzed. If the disposal site cannot be characterized, prediction of potential long-term impacts is not possible.

(2) Potential Land and Resource Use—The disposal site should not have any extensive natural resources beneath it or have such high potential for other subsequent uses of the land that immediate intrusion into the disposal site after active institutional controls are removed is likely.

(3) Surface Water—Areas with large surface water sources or high potential for flooding should be avoided to reduce the greater potential for migration that large quantities of water present.

(4) Ground water—Ground water intrusion into the disposal units should be avoided to reduce the potential for leaching of waste and subsequent migration.

(5) Stability—Stability of the disposal site over the long term is important in helping assure continued site integrity and in reducing the potential for migration and transport of waste to offsite areas.

Disposal Site Design, Land Disposal Facility Operation, and Disposal Site Closure Requirements. The specific requirements for design, operation, and closure of a near-surface disposal facility are directed at achieving long-term stability of the disposed waste and the disposal site so that, after closure, the need for ongoing active maintenance is eliminated and only minor custodial care, surveillance, and monitoring are required. (See § 61.51.) Other requirements are directed at enhancing natural disposal site characteristics by directing surface water away from disposal units, reducing infiltration of precipitation into disposal units, and reducing the potential for erosion, leading to an acceptable condition for disposal site closure.

Specific design requirements are set out relating to assuring protection of an inadvertent intruder from exposure to higher concentration wastes. Such wastes, defined by § 61.55, must be disposed of at greater depths (i.e., a minimum 5 meters below grade) or with equivalent natural or engineering barriers to reduce radiation exposure and further minimize the potential that an individual might inadvertently come in contact with the waste. In addition, a specific provision requires segregation of the lower activity compressible waste from the higher activity wastes and separate disposal. Higher activity wastes are subject to the structural stability requirements of § 61.55(b). Requirements are also established on environmental monitoring (§ 61.53).

Waste Characteristics and Classification. A cornerstone of the system to control the migration of radionuclides offsite is stability—stability of the waste and of the disposal site so that once emplaced and covered, the access of water to the waste can be eliminated or minimized. Thus, a basic requirement on waste is that it should be stable, that is, it should maintain its configuration and consistency under the conditions if would be exposed to after disposal. This stability should last long enough for the radioisotopes to decay to levels where they are no longer of concern from the migration standpoint.

While stability is a necessary characteristic for waste that has a potential for migration, studies have shown that much of the waste being disposed of does not contain sufficient amounts of radionuclides to be of concern from the migration standpoint. However, these same wastes, such as ordinary trash-type wastes tend to be unstable. It is obvious that if these wastes were disposed of with higher activity waste, their deterioration could lead to failure of the system and permit water to penetrate the disposal site and cause problems with the higher activity wastes. The choice, then, is either to require these less hazardous wastes to meet stability requirements or to segregate them from the more hazardous waste. Since stability requirements for low activity wastes would probably require expensive processing, segregation appears to have a cost/benefit advantage in spite of possible increased costs of disposal site stabilization.

A simple waste classification scheme has been devised and incorporated into Part 61. The scheme is based on the role that the waste plays in the assurance that the performance objectives of protecting persons from radiation from waste will be met.

The first categorization of waste is to identify those wastes that do not have to meet the stability requirements and that will be segregated at the disposal site. These wastes, called Class A segregated wastes, are defined in § 61.55 in terms of the maximum allowable concentration of certain isotopes and certain minimum requirements on waste form that are necessary for safe handling. The second category is for waste that requires stability, Class B stable waste, and is defined in terms of allowable concentrations of isotopes and requirements for a stable waste form as well as the minimum handling requirements.

There are concentrations of certain isotopes that will require protection against inadvertent intrusion after institutional controls have lapsed. These concentrations have been determined by analysis of the exposure to humans from the postulated intrusion of an individual after the 100 year period of institutional control. Any waste with concentrations of these isotopes that would cause an exposure greater than 500 millirem must be protected from intrusion by deeper burial or some other barrier. Wastes requiring such protection are identified as Class C intruder wastes.

The waste classification section also places upper limits on concentrations of isotopes in any class of waste. Wastes containing higher concentrations are generally excluded from near-surface disposal. Part 61 provides for special consideration by the Commission of proposed disposal methods on a case-by-case basis for wastes that exceed these values.

For most of the alpha emitting transuranic nuclides, the maximum allowable concentrations were calculated to be in the range of 10 nanocuries per gram currently imposed by disposal facilities. These calculations were conservatively based, in that they did not allow credit for dilution by other wastes. If this factor were changed, the values would increase somewhat. A decision was made not to recalculate in order to come up with higher values. This decision is based on two factors. First, in the spirit of the ALARA (as Low as Reasonably Achievable) concept, the lower value of 10 nCi/g has been demonstrated as an achievable concentration to control the disposal of transuranic nuclides. This value has been imposed by the Department of Energy for some eleven years and by most of the commercial disposal site operators for nearly that long. The last commercial site imposed the 10 nCi/g restriction in 1981. Thus, there is no need to increase the limit from the standpoint of achievability. Second, there is a tendency toward a more conservative assessment of the hazard of certain transuranic nuclides (Ref. ICRP 30) and it does not seem prudent at this time to use the higher calculated values. A value of 350 nCi/g was established for plutonium-241, since

this concentration of short lived beta-emitting isotope decays to a 10 nCi/g concentration of americium-241, a longer lived alpha-emitter. At present, wastes containing transuranic nuclides in concentrations greater than 10 nCi/g are not being generaged in significant volumes.

Based on the values in Table I, and the isotopic content of various waste streams analyzed in the Environmental Impact Statement, the following waste streams would generally fall into the waste classes indicated.

Class A—Segregated Waste

PWR Ion Exchange Resin (low activity)
PWR Concentrated Liquids (low activity)
PWR Filter Sludges (low activity)
PWR Filter Cartridges (low activity)
PWR Compactible Contaminated Trash
BWR Compactible Contaminated Trash
Fuel Fabrication Compactible Trash
Fuel Fabrication Noncompactible Trash
Institutional Trash
Industrial Sealed Source Manufacturing Contaminated Trash
Industrial Low Activity Trash
Fuel Fabrication Process Waste
UF_6 Process Waste
Nuclear Medicine Waste
Biomedical Research Radiotracer Waste, Biowastes, and Contaminated Trash
Academic Institution Radioactive Radiotracer Wastes, Biowastes, and Contaminated Trash

Class B—Stable Waste

PWR Ion Exchange Resins
PWR Concentrated Liquid
PWR Filter Sludges
PWR Filter Cartridges
BWR Ion Exchange Resins
BWR Concentrated Liquids
BWR Filter Sludges
PWR Noncompactible Trash
BWR Noncompactible Trash
LWR [2] Nonfuel Reactor Components
LWR [2] Decontamination Resins
Tritium Production and Processing Waste Accelerator Targets
High Specific Activity Industrial Waste

Class C—Intruder Waste

Waste [2] from Isotope Production Facilities
Sealed [2] Sources

Note.—More recent data indicate that power reactor operation and waste processing characteristics are tending to move LWR wastes into higher classes.

The Commission has not developed a classification of waste based on total hazard. The classification is based on radiation protection considerations.

The Commission, however, has addressed other potential hazards presented by other associated components of waste (e.g., chemical and biological hazards) through te exclusion or treatment of certain chemical, physical and biological forms of waste.

The Commission recognizes the need for a "de minimis" classification of wastes, wastes that would be exempt from Part 61 and would be considered of no regulatory concern. The Commission believes, however, as the Federal Radiation Policy Council has recommended, that such exemptions should be determined on a specific waste basis. In this regard, a recent rulemaking (46 FR 16230) established such an exemption in a new § 20.306 for certain levels of tritium and carbon-14 contained in liquid scintillation and animal carcass waste. Other wastes may also readily lend themselves to treatment in this manner. The Commission will be working over the next 2 years to define these wastes and provide for additional exemptions as appropriate. Thus, Part 61 will not establish a generic "de minimis" category for waste.

D. Land Ownership of Near-Surface Disposal Facilities

Federal or State government ownership of land for disposal of waste at a land disposal facility has been a requirement in the Commission's regulations (10 CFR 20.302) since the inception of commercial disposal operations. This requirement is being continued to assure adequate control of the disposal site after closure and to reduce the potential for inadvertent intrusion. (See § 61.59.)

Although ownership by a State or the Federal Government is required before the Commission will issue a license, the Commission will consider an application when the site is privately owned if the applicant provides evidence that arrangements have been made with a State or the Federal government to assume ownership before the license is issued. The details of the arrangement may include whatever provisions the State or Federal agency considers appropriate as long as they are not inconsistent with requirements of the Commission.

E. Institutional Control

Control of access to the disposal site and use of the land following closure of the site is required to keep people from having contact with the waste and affecting the integrity of the disposal site. Active institutional controls involving periodic surveillance by the custodial agency and controlled access (e.g., maintaining a fence) cannot be relied upon indefinitely (§ 61.60 will not allow reliance on active institutional controls for more than 100 years since this is judged to be maximum time that governmental institutions should be relied on to carry out active controls.)

A monitoring program to check on continued disposal site integrity would also be carried out. Control and surveillance of the disposal site by the State or Federal land owner/custodial agency is needed to prevent an intruder from excavating, drilling wells, or performing other activities that would expose that individual or lead to possible increased migration offsite. Active controls would eventually be removed and replaced by more passive controls (e.g., government land ownership and records) which will be an inexpensive means of ensuring that knowledge of the disposal facility will be retained.

F. Financial Assurances

Given the past history at some of the existing disposal sites, one of the key concerns is assurance of adequate financial qualification on the part of the applicant to construct and operate the disposal facility and to provide adequate financial provisions for disposal site closure and postoperational activities.

Subpart E requires that the applicant be financially qualified to conduct all licensed activities during the construction and operational phases of the land disposal facility. Proof of the financial qualifications of applicants is not currently required by Parts 30 and 40. This new requirement will help assure that resources are not expended on projects without adequate backing. This requirement should minimize the potential for early default or the abandonment of the site by the operator.

Section 61.62 of the Part 61 requires the applicant to provide an acceptable form of financial surety to ensure that funds are available to perform closure and stabilization and observation until the license is transferred to the custodial agency for institutional control or terminated. The Commission has received evidence of a great deal of public interest concerning the issue of financial responsibility for closure of a disposal site. Numerous written comments were made on this portion of the draft regulation, and the issue was also raised at all four workshops held to review this regulation. Many commenters felt that the licensee should be held responsible for the full costs of closure of a disposal site and that the license should not be terminated and the land returned to the custodial government authority until the licensee has completed satisfactory closure.

The amount of surety liability required is based on cost estimates

[1] These waste streams may contain concentrations of certain isotopes that will require special assessment and Commission approval for near-surface disposal.

submitted by the licensee in an approved plan for disposal site closure and stabilization. The applicant must submit a cost estimate for disposal site closure that includes consideration of inflation, increases in the amount of disturbed land, and the closure and stabilization activities that have already occurred at the disposal site. The Commission expects that the closure costs will be minimal when compared to the other life cycle costs of the disposal site because the regulation requires the licensee to perform the majority of closure and stabilization activities as an integral part of normal disposal site procedures during the operating period.

The types of surety arrangements being considered in Part 61 are similar to the Commission's recently enacted uranium mill tailings requirements (45 FR 65521). In their evaluation of various surety mechanisms, the Commission used the following criteria: (1) degree of security in obtaining funds in case the licensee defaults; (2) amount of administrative time and expense required to implement and monitor the surety; (3) problems of asset valuation posed by the mechanism; and (4) the cost of the surety mechanism. Based on this review, the Commission found the following types of surety mechanisms to be acceptable: surety bonds, cash deposits, trust funds, deposits of government securities, escrows, letters or lines of credit, and a combination of these mechanisms or such other types of arrangements as may be approved by the Commission. The Commission found that self-insurance for a private sector applicant was not an acceptable surety mechanism.

Section 61.63 requires the applicant to provide evidence to the Commission that a legally binding arrangement, such as a lease, exists between the applicant and the party holding title to the disposal site. Such a binding arrangement would delineate financial responsibility for the active institutional control period, which is not expected to exceed 100 years. The Commission feels that this regulatory approach is required so that all necessary activities following licensing transfer, such as surveillance, monitoring, and custodial activities, will be performed promptly and in a manner that will protect the public health and safety.

Currently the Commission lacks authority to require land disposal facility licensees to provide financial responsibility for activities occurring after the original licensee's responsibilities have ceased and the license has been transferred to another party. The Commission is considering legislation proposals that would give the Commission the authority to require financial assurances of land disposal facility licensees for the active institutional control period. In the meantime, the Commission feels that the most appropriate regulatory approach is to require an applicant to submit evidence of a binding arrangement.

Manifest Tracking System. Section 20.311 of Part 20 establishes the requirements for a manifest tracking system for wastes. The system will address the need for more complete information on the classification and characteristics of the waste, for improved accountability of wastes, and for a better data base. The EPA has recently instituted a manifest tracking system for hazardous wastes. The General Accounting Office (GAO) noted the need for improvements in these two areas in its report entitled "The Problem of Disposing of Nuclear Low-Level Waste: Where Do We Go from Here?", published March 31, 1980. The GAO recommended that the Commission "Determine who the generators of low-level are in both the Agreement and non-Agreement States and how much waste each licensee is generating" and "Establish a method to track waste from the point of generation to the point of disposal." Improving the data base on waste will improve the credibility of decisionmakers, enable better planning for inspections and emergencies, enhance projection of future waste generation, and help in site specific analyses and planning. The information on waste classification and characteristics is necessary for proper handling and disposal at the land disposal facility (e.g., which waste requires intruder barriers).

Licensees who ship under existing regulations are required to prepare and forward shipping manifests that comply with DOT regulations. The proposed manifest content requirements in § 20.311 are somewhat more comprehensive but compatible with DOT requirements. The waste generator must be specifically identified. The information requirements concerning the waste itself are somewhat more extensive and geared to information needed for disposal, not just transportation and handling. More explicit information on chemical content and composition and solidification agents is required. Licensees are required to comply with and certify compliance with waste form requirements of Part 61. This latter requirement stems solely from the technical requirements for disposal and is therefore new. The land disposal facility licensee must record data on the condition of the waste itself and document and certify receipt, handling, repackaging, storage, and disposal.

The use of the manifests as provided in § 20.311 provides a tracking system that is inspectable. Section 20.311 requires the shipper to provide copies of the manifest to precede and accompany shipments and investigation if notification of receipt or disposal is not received. The responsibility for tracking shipments is with the shipper who may be the generator, a service company who collects, stores, and delivers the waste, or an intermediate processor. A crosscheck is provided to ensure that delayed or missing shipments are investigated by requiring land disposal facility operators to periodically match advance copies of manifests to those for shipments actually received.

G. Life Cycle of a Typical Land Disposal Facility

The life of a typical facility can be broken into 5 phases: preoperational, operational, closure, postclosure observation, and institutional control. The following discussion considers each phase separately. The applicant's activities and procedural requirements as established by this proposed rulemaking are included.

Preoperational Phase. The preoperational phase consists of two parts: disposal site selection and characterization and licensing. The disposal site selection and characterization fall into the data gathering and planning phase. This is the phase in which the applicant selects a region of interest and searches for a number of possible disposal sites (a slate of candidate disposal sites), using reconnaissance-level information. The applicant then narrows the possible disposal sites down to one. After a proposed disposal site has been selected, based upon reconnaissance-level information, the applicant begins a detailed investigation (geology, depth to ground-water table, amount of rainfall, etc.) of the proposed disposal site. The applicant also initiates the preoperational monitoring program.

The applicant prepares an application for the land disposal facility following Subpart B. The applicant also prepares an environmental report. Of particular importance to this application are the performance objectives and technical requirements discussed earlier and the preliminary site closure plan, arrangements concerning land ownership and associated responsibilities, and financial assurance.

Licensing activities begin when the applicant files the application. The application is reviewed for completeness and acceptability in accordance with new Paragraph 2.101(b)(2), prior to docketing. Notice of receipt of the tendered application is to be published in the Federal Register. The Commission notifies state local and tribal officials and begins to coordinate with these officials. Once docketed, the application is again noticed in the Federal Register and the application and environmental report widely distributed. An opportunity for interested parties to request a hearing is provided pursuant to 10 CFR 2.105. Application fees are paid in accordance with 10 CFR Part 170.

The regulatory review period follows. The applicant continues any disposal site studies and the preoperational observation and monitoring. The applicant also responds to informtional requests. Section 61.3 requires that construction not begin until a decision is made to issue the license. The application and environmental report are updated if necessary.

The Commission reviews the application and the accompanying environmental report. The Commission requests additional information if necessary. The Commission prepares a draft environmental impact statement (DEIS). If hearings are requested, an Atomic Safety and Licensing Board (ASLB) is appointed. After the Commission's review is completed and documented and the EIS and any hearings completed, and the Commissioners have approved, the Director issues the license or denies the application in accordance with the criteria in § 61.23 and any decision rendered by the Licensing or Appeals Board. Hearings, if any, would be held in accordance with existing rules in 10 CFR Part 2. An Atomic Safety and Licensing Appeal Board and/or the Commission may review the findings of the ASLB or the ASLB findings may be appealed to these next levels and to the courts. Upon resolution of the hearings, reviews, and appeals, and the Commissioners have approved, the Director takes final action to issue or deny and publishes a notice in the Federal Register. If the ownership of the land has not been transferred to the State or Federal government, transfer would now take place. If the license is issued, it is subject to the general license condition in § 61.24 and to specific conditions as required.

If no hearings have been requested, and the Commissioners approve, the Commission publishes a notice of the issuance in the Federal Register in accordance with § 2.106, and the Director takes final action to issue or deny the license.

State and Indian tribes may participate in the Commission's license review process to aid the Commission in its review. Subpart F of the proposed Part 61 addresses such participation, which is in addition to participation as already provided in Parts 2 and 51.

Examples of the forms that State and Tribal participation may take include:

(1) Development of technical data, including, but not limited to, socioeconomic, hydrological, geological, environmental, or land use data for incorporation into the Commission's environmental impact statement on the application or other analyses.

(2) Development of public participation mechanisms to be included in the licensing process.

(3) Provision of a technical data base to provide verification to the Commission for materials presented in the license application.

(4) Exchange of State and Commission staff for cooperative review.

Operational Phase. After issuance of a license by the Commission the land disposal facility is constructed and waste receipt and disposal operations start. At intervals specified in the license, (the normal term for materials licenses is currently 5 years) the licensee would be required to submit a license renewal application (§ 61.27). At this time, the disposal site closure plan and funding requirements would be updated and financial arrangements for assurance of adequate funding reviewed. A public hearing would be offered. The licensee may also apply for amendments to the license (§ 61.26).

Disposal Site Closure Phase. As the disposal site becomes filled, time for disposal site closure approaches. Prior to closure, the licensee would submit a final closure plan for review and approval (§ 61.28). A public hearing would be offered. Upon approval, the licensee implements the plan. This would consist of decontamination and dismantlement, as appropriate, of buildings. Final disposal site contouring and preparation is performed. The licensee should work toward closure during the entire operational phase so that disposal site closure would not involve a major task.

Postclosure Observation and Maintenance. Implementation of the closure plan would be followed by a period of postclosure observation and maintenance on the part of the licensee, in which the licensee's monitoring and maintenance programs would continue (§ 61.29). This period is expected to last about 5 years to help assure that the disposal site is in a stable condition so that only minor custodial care, surveillance, and monitoring by the custodial agency are required. When the disposal site has reached a stable condition, the licensee may prepare and submit an application for transfer of the license. A public hearing would be offered. Among other things, the licensee must provide reasonable assurance that the site meets all performance objectives under Subpart C, and the Commission must find that the State or Federal agency responsible for postclosure care of the site is prepared to assume these responsibilities. As a condition for assuming these responsibilities, a State may require the licensee to comply with requirements of its own, as long as State's requirements are not inconsistent with the requirements of the Commission. Upon a satisfactory finding, the license will be transferred to the Federal or State custodial agency to cover their activities during the active institutional control period (§ 61.30).

Institutional Control Board. During the institutional control period, which for purposes of Part 61, the Commission assumes to be not more than 100 years, the custodial agency carries out a program of monitoring to assure continued satisfactory site performance and physical surveillance to keep people off the site and carries out minor custodial activities at the site. As a part of the license termination, the licensee is required to place records of the disposal facility with local, State, and Federal agencies. These records along with restrictions on the property deed and trench markers should help minimize disturbance of the disposal site. These latter mechanisms are those that would continue after the institutional control period. At the end of the necessary institutional control period, the license may be terminated (§ 61.31).

H. Other Considerations

Application to Existing Sites. Many of the operational provisions and waste characteristics requirements proposed in this rulemaking are in effect at the existing disposal facilities. Although nearly all disposal at existing facilities is carried out under State licenses, it would be the Commission's intent that in the future all disposal would be expected to comply with the provisions of Part 61. Existing disposal facilities should have no difficulty in complying with the waste classification and characteristics, manifest requirements, and the minimum requirements dealing with design and operations,

environmental monitoring, closure, post-closure observation, and institutional control. Where existing operating sites have difficulty meeting any of the criteria, the Commission will consider the matter on a case by case basis.

Naturally Occurring and Accelerator-Produced Radionuclides in Waste. Although the Commission has no direct statutory authority over naturally occurring and accelerator-produced radionuclides the evaluation of any specific disposal site will include consideration of the total impacts from all waste disposed of at the disposal site, including byproduct, source, special nuclear material, and naturally occurring and accelerator-produced material. Specific concentration limits for the disposal of important naturally occurring and accelerator-produced nuclides will be included in the planned regulatory guide on the classification of waste.

Paperwork Reduction Act. As required by Pub. L. 96–511, this proposed rule will be submitted to the Office of Management and Budget for clearance of the reporting/recordkeeping/application requirements.

Regulatory Flexibility Act. Based upon the information available at this stage of this rulemaking proceeding and in accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rulemaking will not, if promulgated, have a significant economic impact upon a substantial number of small entities.

The Regulatory Flexibility Act (Public Law 96–345) was signed into law in September 1980. The Act's principal objective is to make certain that Federal agencies try, where possible, to fit regulatory requirements to the scale of the affected activity. Significant economic impacts on a substantial number of small entities is a major concern. The proposed Part 61 and accompanying rule changes will potentially impact a significant number of persons licensed by the Commission and the Agreement States. The following discussion addresses the analyses required by the Act and briefly describes the impacts and how the interests of the small entities were considered in developing this proposed rule. The draft EIS for Part 61 provides additional background information and analysis of the impacts of this rulemaking action.

The need for standards to govern the disposal of radioactive wastes and new regulations to implement these standards is discussed in detail in the draft EIS.

Some provisions of the proposed rulemaking will apply to all Commission licensees who transfer radioactive waste for disposal on land. The Commission has approximately 9,000 licensees. All but a few hundred are small entities. Types of small entities that may be impacted include physicians, hospitals, medical and clinical laboratories, colleges and universities, waste collection companies, small industrial operations, and waste disposal site operators. Exact numbers of impacted entities are not available. Based on a 1979 survey of Commission licensees, less than one quarter of the licensees should be affected on a regular basis.

The reporting, recordkeeping, and other requirements with which licensees must comply in the proposed rule impose only a minor incremental burden and will result in better accountability of wastes and improvements in disposal of wastes. The reporting requirements are directed primarily at disposal site operators. Currently only two firms hold this type of license. In the foreseeable future it is not anticipated that the number of this type of licensee will reach ten. The requirements are comparable to existing requirements or requirements that would be imposed in specific licenses for site operation. All licensees transferring waste would be required to investigate and file reports if shipments are lost. (See proposed § 20.311 of 10 CFR Part 20.) Existing regulations have similar but more specific reporting requirements for lost radioactive materials. All licensees transferring waste are also required to prepare complete shipping manifests. The user and radiation safety personnel currently preparing wastes for shipment will have to spend some additional time preparing manifests and tracking shipments. Licensees are already required to keep records of transfers and certain disposals.

Compliance with the waste classification and characteristics requirements is required of all licensees who transfer waste for land disposal. The need for and impacts of compliance with waste criteria are addressed in the draft EIS. The types of impacts that the rule changes may have include additional waste treatment and processing, use of containers to meet waste form requirements, new labels for packages, and higher disposal costs in some cases to cover, for example, the addition of intruder barriers when required. Based on the analysis in the Draft EIS, it appears that very few small entities generate radioactive waste that would be subject to these requirements.

Federal rules that overlap the proposed rule are primarily those of the Department of Transportation (DOT). The Commission is not aware of any rules that duplicate or conflict with the proposed rule except that reports to the Environment Protection Agency on effluent releases and broker activities required by "Superfund" registration may be duplicative. The Commission would particularly welcome comments on how to minimize duplication with "Superfund" requirements. The Commission and DOT have an established working relationship implemented through a formal Memorandum of Understanding. The rule itself acknowledges the need to comply with DOT rules, and the Commission currently inspects licensees for compliance with DOT requirements. The manifest required by this rulemaking is consistent with DOT requirements, and the same document will be used to meet requirements of both agencies. The waste form and packaging requirements are in addition to and compatible with DOT rules.

The Regulatory Flexibility Act also requires discussion of alternatives to the proposed rule. The recordkeeping and reporting requirements impose such a minor incremental burden that no relief or exemption was considered. They are, in fact, minor modifications of existing rules and practices. Further, since the small entities account for a significant percentage of the volume of waste generated, it is important that all licensees participate in the manifest tracking system. The waste classification and characteristics portion of the rule does provide some relief from compliance for waste produced by the small entities. Where radiological hazard permits, segregated disposal has been provided as an option to complying with more restrictive waste acceptance requirements. The rule is a combination of performance and prescriptive requirements, as discussed earlier. Exemption from coverage is feasible when the radiological hazard of the wastes permits. The exemption of less hazardous wastes on a specific waste basis by separate rulemaking efforts was discussed previously. (See de minimis discussion in Section V.C.)

The economic costs of the rule to small entities have not been quantified. The incremental burdens are judged small and have been addressed qualitatively in this summary and in the EIS. The rulemaking should not affect economic factors such as employment, business viability, or ability for affected entities to compete.

The requirements in waste disposal practices are judged to significantly outweigh the small economic impact on

small entities. However, the Commission is seeking comments and suggested modifications because of the widely differing conditions under which small entities operate.

Any small entity subject to this regulation who determines that because of its size, it is likely to bear disproportionate adverse economic impact should apprise the Commission in a comment that indicates:

(1) The size of their business and how the proposed regulations would result in a significant economic burden upon them as compareed to larger organizations in the same business community;

(2) How the proposed regulations could be modified to take into account their differing needs or capabilities;

(3) The benefits that would accrue, or the detriments that would be avoided, if the proposed regulations were modified as suggested by the commenter; and

(4) How the proposed regulations, as modified, would still adequately protect the public health and safety.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of title 5 of the United States Code, notice is hereby given that adoption of a new 10 CFR Part 61 and the following amendments to 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 70, 73 and 170 is contemplated.

A new Part 61 is added to 10 CFR to read as follows:

PART 61—LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE

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Authority. Secs. 53, 57d, 62, 63, 65, 81, 161b., i., o., 182, 183, Pub. L.83-703, as amended, 68 Stat., 930, 932, 933, 935, 948, 950, 953, 954, as amended (42 U.S.C., 2073, 2077, 2092, 2093, 2095, 2111, 2201, 2232, 2233); Secs. 202, 206, Pub. L. 93-438, 88 Stat. 1244, 1246 (42 U.S.C. 5842, 5846); Sec. 14, Pub. L. 95-601 (42 U.S.C. 2021a). For the purposes of Sec. 223, 68 Stat. 958, as amended, 42 U.S.C. 2273, Table 5, §§ 61.55, 61.56 issued under Sec. 161b, 68 Stat. 948; §§ 61.3, 61.10 through 61.17, 61.24, 61.61 through 61.63, and 61.80 issued under Sec. 161o., 68 Stat. 950, as amended (42 U.S.C. 2201).

Subpart A—General Provisions

§ 61.1 Purpose and scope.

(a) The regulations in this part establish, for land disposal of radioactive waste, the procedures and criteria for the issuance, and terms and conditions upon which the Commission issues licenses, for the disposal for others of radioactive wastes containing byproduct, source and special nuclear material. Disposal of waste by an individual licensee is set forth in Part 20 of this chapter.

(b) Except as provided in § 61.6 "Exemptions" and in Part 150 of this chapter, the regulations in this part apply to all persons in the United States. The regulations in this part do not apply to the disposal of high-level waste as provided for in Part 60 of this chapter or byproduct material (as defined in § 40.4(a-1)) as provided for in Part 40 of this chapter and licensed material as provided for in Part 20.

§ 61.2 Definitions.

As used in this part:

"Active maintenance" means any significant remedial activity needed during the period of institutional control to maintain a reasonable assurance that the performance objectives in §§ 61.41 and 61.42 are met. Such active maintenance includes ongoing activities such as the pumping and treatment of water from a disposal unit or one-time measures such as replacement of a disposal unit cover. Active maintenance does not include custodial activities such as repair of fencing, repair or replacement of monitoring equipment, revegatation, minor additions to soil cover, minor repair of disposal unit covers, and general disposal site upkeep such as mowing grass.

"Buffer zone" is a portion of the disposal site that is controlled by the licensee and that lies between the disposal units and the boundary of the site.

"Chelating agent" means a chemical compound which can be attached to a metal ion by at least two bonds in such a way as to form a ring structure. It is used to sequester metal ions that might be undesirable in a particular environment.

"Commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a land disposal facility. The term does not mean disposal site exploration, necessary roads for disposal site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the disposal site or the protection of environmental values.

"Commission" means the Nuclear Regulatory Commission or its duly authorized representatives.

"Director" means the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission.

"Disposal" means the isolation of radioactive wastes from the biosphere by emplacement in a land disposal facility.

"Engineered barrier" means a man-made structure or device that is intended to protect an intruder from inadvertent exposure to radiation from certain wastes.

"Disposal site" means that portion of a land disposal facility which is used for disposal of waste. It consists of disposal units and a buffer zone.

"Disposal unit" means a discrete portion of the disposal site into which waste is placed for disposal. For near-surface disposal the unit is usually a trench.

"Government agency" means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the government.

"Inadvertent intruder" means a person who might occupy the disposal site unknowingly after closure and engage in normal activities, such as agriculture, dwelling construction, and other pursuits in which the person might be exposed unknowingly to radiation from the waste.

"Indian Tribe" means an Indian tribe as defined in the Indian Self-Determination and Education Assistance Act (25 USC 450).

"Intruder barrier" means a sufficient depth of cover over the waste that inhibits contact with waste and helps to assure that radiation exposures to an inadvertent intruder will meet the performance objectives set forth in this part, or engineered structures that provide equivalent protection to the inadvertent intruder.

"Hydrogeologic unit" means any soil or rock unit or zone which by virtue of its porosity or permeability, or lack thereof, has a distinct influence on the storage or movement of groundwater.

"Land disposal facility" means the land, buildings, and equipment which is intended to be used for the disposal of radioactive wastes into the subsurface of the land. For purposes of this chapter, a geologic repository as defined in Part 60 is not considered a land disposal facility.

"License" means a license issued under the regulations in Parts 30 through 35, 40, 50, 61, or 70 of this chapter, including licenses to operate a production or utilization facility pursuant to Part 50 of this chapter. "Licensee" means the holder of such a license.

"Monitoring" means observing and making measurements to provide data to evaluate the performance and characteristics of the disposal site.

"Near-surface disposal facility" means land disposal facility in which radioactive waste is disposed of in or within the upper 15-20 meters of the earth's surface.

"Person" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, government agency other than the Commission or the Department of Energy, (except that the Department of Energy is considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to section 202 of the Energy Reorganization Act of 1974 (88 Stat. 1244)), any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

"Site closure and stabilization" means those actions that are taken upon completion of operations that prepare the disposal site for custodial care and that assure that the disposal site remain stable and will not need ongoing active maintenance.

"State" means any State, Territory, or possession of the United States, the Canal Zone, Puerto Rico, and the District of Columbia.

"Surveillance" means observation of the disposal site for purposes of visual detection of need for maintenance, custodial care, evidence of intrusion, and compliance with other license and regulatory requirements.

"Tribal Governing Body" means a Tribal organization as defined in the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450).

"Waste", for purposes of this part, means those low-level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level waste has the same meaning as in the Low-Level Waste Policy Act, that is radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11e.(2) of the Atomic Energy Act.

§ 61.3 Licenses required.

(a) No person may receive, possess, and dispose of radioactive waste containing source, special nuclear, or byproduct material at a land disposal facility unless authorized by a license issued by the Commission pursuant to this part.

(b) Each person shall file an application with the Commission and obtain a license as provided in this part before commencing construction of a land disposal facility. Failure to comply with this requirement may be grounds for denial of a license.

§ 61.4 Communications.

Except where otherwise specified, all communications and reports concerning the regulations in this part and applications filed under them should be addressed to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Communications reports, and applications may be delivered in person at the Commission's offices at 1717 H Street NW., Washington, D.C. or 7915 Eastern Avenue, Silver Spring, Maryland.

§ 61.5 Interpretations.

Except as specifically authorized by the Commission, in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be considered binding upon the Commission.

§ 61.6 Exemptions.

The Commission may, upon application by an interested person, or upon its own initiative, grant any exemption from the requirements of the regulations in this part as it determines is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest.

§ 61.7 Concepts.

(a) *The Disposal facility.* (1) Part 61 is intended to apply to *land disposal* of radioactive waste and not to other methods such as sea or extraterrestrial disposal. In its present form, Part 61 contains procedural requirements and performance objectives applicable to any method of land disposal. It contains specific technical requirements for *near-*

surface disposal of radioactive waste which involves disposal in the uppermost 15 to 20 meters of the earth. Technical requirements for alternative methods will be added in the future.

(2) Near-surface disposal of radioactive waste takes place at a *near-surface disposal facility*, which includes all of the land and buildings necessary to carry out the disposal. The *disposal site* is that portion of the facility which is used for disposal of waste and consists of *disposal units* and a *buffer zone*. A *disposal unit* is a discrete portion of the disposal site into which waste is placed for disposal. For near-surface disposal, the disposal unit is usually a trench. A *buffer zone* is a portion of the disposal site that is controlled by the licensee and that lies between the boundary of the disposal site and any disposal unit. It provides controlled space to establish *monitoring* locations which are intended to provide an early warning of radionuclide movement, and to take mitigative measures if needed.

(b) *Waste Classification and Near-Surface Disposal.* (1) Disposal of radioactive waste in near-surface disposal facilities has two primary safety objectives: *prevention of migration* of radionuclides, primarily through *groundwater;* and prevention of exposure to *inadvertent intruders.*

(2) A cornerstone of the system to control the migration of radionuclides offsite is *stability*—stability of the waste and the disposal site so that once emplaced and covered, the access of water to the waste can be eliminated or minimized. While stability is a necessary characteristic for waste that has a potential for migration, much radioactive waste does not contain sufficient amounts of radionuclides to be of concern from this standpoint; this waste, however, tends to be unstable, such as ordinary trash type wastes. If mixed with the higher activity waste, their deterioration could lead to failure of the system and permit water to penetrate the disposal unit and cause problems with the higher activity waste. Therefore, in order to avoid placing requirements for a stable waste form on relatively innocuous waste, these wastes have been classed as *Class A segregated* waste. Even though the Class A segregated waste is unstable, it decays to acceptable levels during the period when the site is occupied and active maintenance can control water infiltration. Those higher activity wastes that should be stable for proper disposal are classed as *Class B stable* waste. The Class A segregated waste will be disposed of in separate disposal units at the disposal site. For certain isotopes, a maximum disposal site inventory will be established based on the characteristics of the disposal site.

(3) It is possible but unlikely that persons might occupy the site in the future and engage in normal pursuits without knowing that they were receiving radiation exposure. These persons are referred to as *inadvertent intruders.* Protection of such intruders can involve two principal controls: *institutional control* over the site after operations by the site owner to assure that no such occupation or improper use of the site occurs; or, designating which waste would present an unacceptable risk to an intruder, and disposing of this waste in a manner that provides some form of *intruder barrier* that is intended to prevent contact with the waste. This regulation incorporates both types of protective controls.

(4) Institutional control is relied on for periods up to *100 years* to control access to the closed site. This permits the disposal of Class A segregated and Class B stable waste without special provisions for intrusion protection, since these classes of waste contain types and quantities of radioisotopes that will decay during the 100-year period to levels that do not pose a danger to public health and safety.

(5) Waste that will not decay to such levels within 100 years is designated as *Class C intruder* waste. This waste is disposed of at a greater depth than the other classes of waste so that subsequent surface activities by an intruder will not disturb the waste. Where site conditions prevent deeper disposal, *engineered barriers* such as concrete covers may be used. The assumed effective life of these intruder barriers is 500 years. A *maximum concentration* of radionuclides is specified for all wastes so that at the end of the 500 year period, remaining radioactivity is at a level that does not pose a danger to public health and safety. Waste with concentrations above these limits is generally unacceptable for near-surface disposal. Some provisions are made for exceptions on a case-by-case basis. Class C intruder waste must also be stable, since stability contributes to intruder protection by providing a recognizable and nondispersible waste form.

(c) *The Licensing Process.* (1) During the *preoperational phase*, the potential applicant goes through a process of *disposal site selection* by selecting a region of interest and examining a number of possible disposal sites and narrowing the choice to the *proposed* site. Through a detailed investigation of the *disposal site characteristics* the potential applicant obtains data on which to base an analysis of the disposal site's suitability. Along with these data and analyses, the applicant submits other more general information to the Commission in the form of an *application* for a license for land disposal. The Commission's review of the application is in accordance with established administrative procedures and may involve *participation* by affected *State governments* or *Indian tribes.* While the proposed disposal site must be owned by a State or the Federal government before the Commission will issue a license, it may be privately owned during the preoperational phase if suitable arrangements have been made with a State or the Federal government to take ownership in fee of the land before the license is issued.

(2) During the *operational phase*, the licensee carries out disposal activities in accordance with the requirements of this regulation and any conditions on the license. Periodically, the authority to conduct the above surface operations and receive waste will be subject to a *license renewal*, at which time the operating history will be reviewed and a decision made to permit or deny continued operation. When disposal operations are to cease, the licensee applies for an amendment to his license to permit *site closure.* After final review of the licensee's *site closure and stabilization plan*, the Commission may approve the final activities necessary to prepare the disposal site for the period of institutional control, without the need for ongoing *active maintenance* of the site.

(3) During the period when the site closure and stabilization activities are being carried out, the licensee is in a *disposal site closure* phase. Following that, for a period of at least 5 years, the licensee must remain at the disposal site for a period of *postclosure observation and maintenance* to assure that the disposal site is stable and ready for institutional control. At the end of this period, the licensee applies for a *license transfer* to the disposal site owner.

(4) After a finding of satisfactory disposal site closure, the Commission will transfer the license to the State or Federal agency that owns the disposal site. If the Department of Energy is the Federal agency the license will be terminated. Under the conditions of the transferred license, the owner will carry out a program of *monitoring* to assure continued satisfactory disposal site performance, physical *surveillance* to restrict access to the site and carry out minor *custodial activities.* At the end of

the prescribed period of institutional control, the license will be terminated by the Commission.

Subpart B—Licenses

§ 61.10 Content of application.

(a) An application to receive from others, possess, use and dispose of wastes containing or contaminated with source, byproduct or special nuclear material by land burial must consist of general information, specific technical information, institutional information, and financial information as set forth in §§ 61.11 through 61.16. An environmental report prepared in accordance with Part 51 of this chapter must accompany the application.

§ 61.11 General information.

The general information must include each of the following:

(a) Identity of the applicant including:

(1) The full name, address, telephone number and description of the business or occupation of the applicant;

(2) If the applicant is a partnership, the name, and address of each partner and the principal location where the partnership does business;

(3) If the applicant is a corporation or an unincorporated association, (i) the state where it is incorporated or organized and the principal location where it does business, and (ii) the names and addresses of its directors and principal officers; and

(4) If the applicant is acting as an agent or representative of another person in filing the application, all information required under this paragraph must be supplied with respect to the other person.

(b) Qualifications of the applicant:

(1) The organizational structure of the applicant, both offsite and onsite, including a description of lines of authority and assignments of responsibilities, whether in the form of administrative directives, contract provisions, or otherwise:

(2) The technical qualifications, including training and experience, of the applicant and members of the applicant's staff to engage in the proposed activities and minimum training and experience requirements for personnel filling key positions described in § 61.11(b)(1).

(3) A description of the applicant's personnel training program; and

(4) The plan to maintain an adequate complement of trained personnel to carry out waste receipt, handling, and disposal operations, in a safe manner.

(c) A description of:

(1) The location of the proposed disposal site;

(2) The general character of the proposed activities;

(3) The types and quantities of radioactive waste to be received, possessed, and disposed of;

(4) Plans for use of the land disposal facility for purposes other than disposal of radioactive wastes; and

(5) The proposed facilities and equipment.

(d) Proposed schedules for construction, receipt of waste, and first emplacement of waste at the proposed land disposal facility.

§ 61.12 Specific technical information.

The specific technical information must include the following information needed for demonstration that the performance objectives of Subpart C of this part and the applicable technical requirements of Subpart D of this part will be met:

(a) A description of the natural disposal site characteristics as determined by disposal site selection and characterization activities. The description must include geologic, technical hydrologic, meteorologic, climatologic, and biotic features of the disposal site and vicinity.

(b) A description of the design features of the land disposal facility and the disposal units. For near-surface disposal, the description must include those design features related to infiltration of water; integrity of covers for disposal units; structural stability of backfill, wastes, and covers; contact of wastes with standing water; disposal site drainage; disposal site closure and stabilization; elimination of long-term disposal site maintenance; inadvertent intrusion; occupational exposures; and disposal site monitoring.

(c) A description of the principal design criteria and their relationship to the performance objectives.

(d) A description of the design basis natural events or phenomena and their relationship to the principal design criteria.

(e) A description of codes and standards which the applicant has applied to the design and which will apply to construction of the land disposal facilities.

(f) A description of the construction and operation of the land disposal facility. The description must include the methods of construction; waste emplacement; the procedures for and areas of waste segregation; types of intruder barriers; onsite traffic and drainage systems; survey control program; methods and areas of waste storage; and methods to control surface water and groundwater access to the wastes.

(g) A description of the disposal site closure plan, including those design features which are intended to facilitate disposal site closure and to eliminate the need for ongoing active maintenance.

(h) An identification of the natural resources at the disposal site, the exploitation of which could result in inadvertent intrusion into the low-level wastes after removal of active institutional control.

(i) A description of the kind, amount, classification and specifications of the radioactive material proposed to be received, possessed, and disposed of at the land disposal facility.

(j) A description of the quality assurance program for the determination of natural disposal site characteristics and for quality assurance during the design, construction, and operation of the land disposal facility and the receipt, handling, and emplacement of waste. Audits and managerial controls must be included.

(k) A description of the radiation safety program for control and monitoring radioactive effluents and occupational radiation exposure to demonstrate compliance with the requirements of Part 20 of this chapter and to control contamination of personnel, vehicles, equipment, buildings, and the disposal site. Both routine operations and accidents must be addressed. The program description must include procedures, instrumentation, facilities, and equipment.

(l) A description of the environmental monitoring program to provide data to evaluate potential health and environmental impacts and the plan for taking corrective measures if migration of radionuclides is indicated.

(m) A description of the administrative procedures that the applicant will apply to control activities at the land disposal facility.

§ 61.13 Technical analyses.

The specific technical information must also include the following analyses needed to demonstrate that the performance objectives of Subpart C of this part will be met:

(a) Pathways analyzed in demonstrating protection of the general population from releases of radioactivity including air, soil, groundwater, surface water, plant uptake, and exhumation by burrowing animals. For near-surface disposal, the groundwater pathway will generally be the most significant in terms of releases of radioactivity. The migration analyses must clearly identify and differentiate between the roles

performed by the natural disposal site characteristics and design features in isolating and segregating the wastes. The analyses must clearly demonstrate that there is reasonable assurance that the exposures to humans from the migration of radioactivity will not exceed the limits set forth in § 61.41.

(b) Analyses of the protection of individuals from inadvertent intrusion must include demonstration that the waste classification and segregation requirements will be met and that adequate barriers to inadvertent intrusion will be provided.

(c) Analyses of the protection of individuals during operations must include assessments of expected exposures due to routine operations and likely accidents during handling, storage, and disposal of waste. The analyses must provide reasonable assurance that exposure will be controlled to meet the requirements of Part 20 of this chapter.

(d) Analyses of the long-term stability of the disposal site and the need for ongoing active maintenance after closure must be based upon analyses of active natural processes such as erosion, mass wasting, slope failure, settlement of wastes and backfill, infiltration through covers over disposal areas and adjacent soils and surface drainage of the disposal site. The analyses must provide reasonable assurance that there will not be a need for ongoing active maintenance of the disposal site following closure.

§ 61.14 Institutional information.

The institutional information must include:

(a) A certification by the Federal or State government agency which owns the disposal site that the agency is prepared to accept transfer of the license when the provisions of § 61.30 are met, and will assume responsibility for custodial care after site closure and post closure observation and maintenance.

(b) Where the proposed disposal site is on land not owned by the Federal or a State government, the applicant must submit evidence that arrangements have been made for assumption of ownership in fees by the Federal or a State government before the Commission issues a license.

§ 61.15 Financial information.

The financial information must be sufficient to demonstrate that the financial qualifications of the applicant are adequate to carry out the activities for which the license is sought and meet other financial assurance requirements as specified in Subpart E of this part.

§ 61.16 Other information.

Depending upon the nature of the wastes to be disposed of, and the design and proposed operation of the land disposal facility, additional information may be requested by the Commission including the following:

(a) Physical security measures, if appropriate. Any application to receive and possess special nuclear material in quantities subject to the requirements of Part 73 of this chapter shall demonstrate how the physical security requirements of Part 73 will be met. In determining whether receipt and possession will be subject to the requirements of Part 73, the applicant does not need to consider materials after disposal.

(b) Information concerning criticality, if appropriate.

(1) Any applicant to receive and possess special nuclear material in quantities that would be subject to the requirements of § 70.24, "Criticality accident requirements" of Part 70 of this chapter shall demonstrate how the requirements of this section will be met. In determining whether receipt and possession would be subject to the requirements of § 70.24, the applicant does not need to consider the quantity of special nuclear material that has been disposed.

(2) Any application to receive and possess special nuclear material shall describe procedures and provisions for criticality control which address both storage of special nuclear material prior to disposal and waste emplacement for disposal.

§ 61.20 Filing and distribution of application.

(a) An application for a license under this part, and any amendments thereto, shall be filed with the Director, must be signed by the applicant or the applicant's authorized representative, under oath and must consist of 1 signed original and 2 copies.

(b) Another 85 copies of the application and environmental report must be retained by the applicant for distribution in accordance with written instructions from the Director or designee.

(c) *Fees.* Application, amendment, and inspection fees applicable to a license covering the receipt and disposal of radioactive wastes in a land disposal facility are required by Part 170 of this chapter.

§ 61.21 Elimination of repetition.

In its application or environmental report, the applicant may incorporate by reference information contained in previous applications, statements, or reports filed with the Commission if these references are clear and specific.

§ 61.22 Updating of application and environmental report.

(a) The application and environmental report must be as complete as possible in the light of information that is available at the time of submittal.

(b) The applicant shall supplement its application or environmental report in a timely manner, as necessary, to permit the Commission to review, prior to issuance of a license, any changes in the activities proposed to be carried out or new information regarding the proposed activities.

§ 61.23 Standards for issuance of a license.

A license for the receipt, possession, and disposal of waste containing or contaminated with source, special nuclear, or byproduct material will be issued by the Commission upon finding that the issuance of the license will not be inimical to the common defense and security and will not constitute an unreasonable risk to the health and safety of the public, and:

(a) The applicant is qualified by reason of training and experience to carry out the disposal operations requested in a manner that protects health and minimizes danger to life or property.

(b) The applicant's proposed disposal site, disposal design, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and postclosure institutional care are adequate to protect the public health and safety in that they provide reasonable assurance that the general population will be protected from releases of radioactivity as specified in the performance objective in § 61.41.

(c) The applicant's proposed disposal site, disposal site design, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and postclosure institutional care are adequate to protect the public health and safety in that they provide reasonable assurance that doses to individual inadvertent intruders should not exceed the dose limits established in the performance objective in § 61.42.

(d) The applicant's proposed land disposal facility operations, including equipment, facilities, and procedures, are adequate to protect the public health and safety in that they provide reasonable assurance that the standards for radiation protection set out in Part 20 of this chapter will be met.

(e) The applicant's proposed disposal site, disposal site design, land disposal

facility operations, disposal site closure, and postclosure institutional care are adequate to protect the public health and safety in that they provide reasonable assurance of long-term stability of the disposed waste and the disposal site and should eliminate the need for ongoing active maintenance of the disposal site following closure.

(f) There is adequate demonstration that the applicable technical requirements of Subpart D of this part will be met.

(g) Institutional care is assured for the length of time found necessary to assure the findings in paragraphs (b)–(e) of this section and that the institutional care meets the requirements of §§ 61.59 and 61.60.

(h) The information on financial assurances meets the requirements of subpart E of this part.

(i) The applicant has demonstrated compliance with the requirements of Part 73 of this chapter, insofar as they are applicable to special nuclear material to be possessed under the license.

(j) The applicant has demonstrated compliance with the requirements of § 70.24 of Part 70 of this chapter, insofar as they are applicable to special nuclear material to be possessed under the license.

(k) Any additional information submitted as requested by the Commission pursuant to § 61.16 is adequate.

(l) The requirements of Part 51 of this chapter have been met.

§ 61.24 Conditions of licenses.

(a) A license issued under this part, or any right thereunder, may be transferred, assigned, or in any manner disposed of, either voluntarily, directly or indirectly, through transfer of control of the license to any person, only if the Commission finds, after securing full information, that the transfer is in accordance with the provisions of the Atomic Energy Act and gives its consent in writing in the form of a license amendment.

(b) The licensee shall submit written statements under oath upon request of the Commission, at any time before termination of the license, to enable the Commission to determine whether or not the license should be modified, suspended, or revoked.

(c) The license will be terminated only on the full implementation of the final closure plan as approved by the Commission, including postclosure observation and maintenance.

(d) The licensee shall be subject to the provisions of the Atomic Energy Act now or hereafter in effect, and to all rules, regulations, and orders of the Commission. The terms and conditions of the license are subject to amendment, revision, or modification, by reason of amendments to, or by reason of rules, regulations, and orders issued in accordance with the terms of the Atomic Energy Act.

(e) Any license may be revoked, suspended or modified in whole or in part for any material false statement in the application or any statement of fact required under Section 182 of the Act, or because of conditions revealed by any application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license to the original application, or for failure to operate the facility in accordance with the terms of the license, or for any violation of, or failure to observe any of the terms and conditions of the Act, or any regulation, license or order of the Commission.

(f) Each person licensed by the Commission pursuant to the regulations in this part shall confine possession and use of materials to the locations and purposes authorized in the license.

(g) No radioactive waste may be disposed of until the Commission has inspected the land disposal facility and has found it to be in conformance with the description, design, and construction described in the application for a license.

(h) The Commission may incorporate in any license at the time of issuance, or thereafter, by appropriate rule, regulation or order, additional requirements and conditions with respect to the licensee's receipt, possession, and disposal of source, special nuclear or byproduct material as it deems appropriate or necessary in order to:

(1) Promote the common defense and security;

(2) Protect health or to minimize danger to life or property;

(3) Require such reports and the keeping of records, and to provide for such inspections of activities under the license that may be necessary or appropriate to effectuate the purposes of the Act and regulations thereunder.

(i) Any licensee who receives and possesses special nuclear material under this part in quantities that would be subject to the requirements of § 70.24 of Part 70 of this chapter shall comply with the requirements of that section. The licensee does not need to consider the quantity of materials which it has disposed.

§ 61.25 Changes.

(a) Except as provided for in specific license conditions, the licensee shall not make changes in the land disposal facility or procedures described in the license application. The license will include conditions restricting subsequent changes to the facility and the procedures authorized. These restrictions will fall into three categories of descending importance to public health and safety as follows: (1) those features and procedures which may not be changed without (i) 60 days prior notice to the Commission, (ii) 30 days notice of opportunity for a prior hearing, and (iii) prior Commission approval; (2) those features and procedures which may not be changed without (i) 60 days prior notice to the Commission, and (ii) prior Commission approval; and (3) those features and procedures which may not be changed without 60 days prior notice to the Commission. Features and procedures falling in paragraph (a)(3) of this section may not be changed without prior Commission approval if the Commission, after having received the required notice, so orders.

(b) Amendments authorizing license renewal, site closure, license transfer, or license termination shall be included in paragraph (a)(1) of this section.

§ 61.26 Amendment of license.

(a) An application for amendment of a license must be filed in accordance with § 61.20 and shall fully describe the changes desired.

(b) In determining whether an amendment to a license will be approved, the Commission will apply the criteria set forth in § 61.23.

§ 61.27 Application for renewal or closure.

(a) Any expiration date on a license applies only to the above ground activities and to the authority to dispose of waste. Failure to renew the license in no way relieves the licensee of responsibility for carrying out site closure, postclosure observation and transfer of the license to the site owner. An application for renewal or an application for closure under § 61.28 must be filed at least 30 days prior to license expiration.

(b) Applications for renewal of a license must be filed in accordance with §§ 61.10 through 61.16 and 61.20. Applications for closure must be filed in accordance with §§ 61.20 and 61.28. Information contained in previous applications, statements or reports filed with the Commission under the license may be incorporated by reference if the references are clear and specific.

(c) In any case in which a licensee has timely filed an application for renewal of a license, the license for continued receipt and disposal of licensed materials does not expire until the Commission has taken final action on the application for renewal.

(d) In determining whether a license will be renewed, the Commission will apply the criteria set forth in § 61.23.

§ 61.28 Content of application for closure.

(a) Prior to final closure of the disposal site, or as otherwise directed by the Commission, the applicant shall submit an application to amend the license for closure. This closure application must include a final revision and specific details of the disposal site closure plan included as part of the license application submitted under § 61.12(g) that includes each of the following:

(1) Any additional geologic, hydrologic, or other disposal site data pertinent to the long-term containment of emplaced radioactive wastes obtained during the operational period.

(2) The results of tests, experiments, or any other analyses relating to backfill of excavated areas, closure and sealing, waste migration and interaction with emplacement media, or any other tests, experiments, or analysis pertinent to the long-term containment of emplaced waste within the disposal site.

(3) Any proposed revision of plans for:

(i) Decontamination and/or dismantlement of surface facilities;

(ii) Backfilling of excavated areas; or

(iii) Stabilization of the disposal site for post-closure care.

(4) Any significant new information regarding the environmental impact of closure activities and long-term performance of the disposal site.

(b) Upon review and consideration of an application to amend the license for closure submitted in accordance with paragraph (a) of this section, the Commission shall issue an amendment authorizing closure if there is reasonable assurance that the long-term performance objectives of Subpart C of this part will be met.

§ 61.29 Post-closure observation and maintenance.

Following completion of closure authorized in § 61.28, the licensee shall observe, monitor, and carry out necessary maintenance and repairs at the disposal site until the site closure is complete and the license is transferred by the Commission in accordance with § 61.30. Responsibility for the disposal site must be maintained by the licensee for a minimum of 5 years.

§ 61.30 Transfer of license.

(a) Following closure and the period of post-closure observation and maintenance, the licensee may apply for an amendment to transfer the license to the disposal site owner. The license shall be transferred when the Commission finds:

(1) That the closure of the disposal site has been made in conformance with the licensee's disposal site closure plan, as amended and approved as part of the license;

(2) That reasonable assurance has been provided by the licensee that the performance objectives of Subpart C of this part are met;

(3) That any funds and necessary records for care will be transferred to the disposal site owner;

(4) That the post-closure monitoring program is operational for implementation by the disposal site owner; and

(5) That the Federal or State government agency which will assume responsibility for custodial care of the disposal site is prepared to assume responsibility and assure that the institutional requirements found necessary under § 61.23(g) will be met.

§ 61.31 Termination of license.

(a) Following any period of custodial care needed to meet the requirements found necessary under § 61.23, the licensee may apply for an amendment to terminate the license.

(b) This application must be filed, and will be reviewed, in accordance with the provision of § 61.20 and of this section.

(c) A license is terminated only when the Commission finds:

(1) That the institutional care requirements found necessary under § 61.23(g) have been met; and

(2) That any additional requirements resulting from new information developed during the custodial period have been met.

Subpart C—Performance Objectives

§ 61.40 General requirement.

Land disposal facilities must be sited, designed, operated, closed, and controlled after closure so that reasonable assurance exists that exposures to humans are within the limits established in the performance objectives in §§ 61.41 through 61.44.

§ 61.41 Protection of the general population from releases of radioactivity.

Concentrations of radioactive material which may be released to the general environment in ground water, surface water, air, soil, plants, or animals must not result in an annual dose exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public. In addition, concentrations of radioactive material in groundwater must not exceed the maximum contaminant levels established in the National Primary Drinking Water Standards (40 CFR Part 141) at the nearest public drinking water supply (a limit of 10 pCi/1 above background must be used for uranium and thorium).

§ 61.42 Protection of individuals from inadvertent intrusion.

Design operation and closure of the land disposal facility must not result in conditions where any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste after active institutional controls over the disposal site are removed, could receive a dose to the whole body in excess of 500 millirem per year.

§ 61.43 Protection of individuals during operations.

Operations at the land disposal facility must be conducted in compliance with the standards for radiation protection set out in Part 20 of this chapter.

§ 61.44 Stability of the disposal site after closure.

The disposal facility must be designed, used, operated, and closed to achieve long-term stability of the disposed waste and the disposal site and to eliminate the need for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required.

Subpart D—Technical Requirements for Land Disposal Facilities

§ 61.50 Disposal site suitability requirements for land disposal.

(a) Disposal site suitability for near-surface disposal.

(1) The purpose of this section is to specify the minimum characteristics a disposal site must have to be acceptable for use as a near-surface disposal site. The primary emphasis in disposal site suitability is given to isolation of wastes, a matter having long-term impacts, and to disposal site features that assure that the long-term performance objectives of Subpart C of this part are met, as opposed to short-term convenience or benefits.

(2) The disposal site shall be capable of being characterized, modeled, analyzed and monitored.

(3) Within the region or state where the facility is to be located, a disposal site should be selected so that projected population growth and future developments are not likely to affect the ability of the disposal facility to meet the performance objectives of Subpart C of this part.

(4) Areas must be avoided having economically significant natural resources which, if exploited, would result in failure to meet the performance objectives of Subpart C of this part.

(5) The disposal site must be generally well drained and free of areas of flooding or frequent ponding. Waste disposal shall not take place in a 100-year flood plain, coastal high-hazard area or wetland.

(6) Upstream drainage areas must be minimized to decrease the amount of runoff which could erode or innundate waste disposal units.

(7) The disposal site must provide sufficient depth to the water table that ground water intrusion, perennial or otherwise, into the waste will not occur. The Commission will consider exceptions to this requirement if it can be conclusively shown that disposal site characteristics will result in diffusion being the predominant means of radionuclide movement and the rate of movement will result in the performance objectives of Subpart C of this part being met.

(8) Any groundwater discharge to the surface within the disposal site must not originate within the hydrogeologic unit used for disposal.

(9) Areas must be avoided where tectonic processes such as faulting, folding, seismic activity, or vulcanism may occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of Subpart C, of this part or may preclude defensible modeling and prediction of long-term impacts.

(10) Areas must be avoided where surface geologic processes such as mass wasting, erosion, slumping, landsliding, or weathering occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of Subpart C, of this part or may preclude defensible modeling and prediction of long-term impacts.

(11) The disposal site must not be located where nearby facilities or activities could adversely impact the ability of the site to meet the performance objectives of Subpart C of this part or significantly mask the environmental monitoring program.

(b) Disposal site suitability requirements for land disposal other than near-surface (reserved).

§ 61.51 Disposal site design for land disposal.

(a) Disposal site design for near-surface disposal.

(1) Site design features must be directed toward long-term isolation and avoidance of the need for continuing active maintenance.

(2) The disposal site design and operation must be compatible with the disposal site closure and stabilization plan and lead to disposal site closure that provides reasonable assurance that the performance objectives of Subpart C of this part will be met.

(3) The disposal site must be designed to complement and improve the ability of the disposal site's natural characteristics to assure that the performance objectives of Subpart C of this part will be met.

(4) Covers must be designed to prevent water infiltration, to direct precolating or surface water away from the buried waste, and to resist degradation by surface geologic processes and biotic activity.

(5) Surface features must direct surface water drainage away from disposal units at velocities and gradients which will not result in erosion that will require ongoing active maintenance in the future.

(6) The disposal site must be designed to eliminate the contact of water with waste during storage, the contact of standing water with waste during disposal, and the contact of percolating or standing water with wastes after disposal.

(7) The disposal site shall be used exclusively for the disposal of radioactive wastes.

(b) Disposal site design for other than near-surface disposal (reserved).

§ 61.52 Land disposal facility operation and disposal site closure.

(a) Near-surface disposal facility operation and disposal site closure.

(1) Wastes designated as Class A segregated, pursuant to § 61.55, must be segregated from other wastes by placing in disposal units which are sufficiently separated from other units so that there is no interaction between them.

(2) Wastes designated as Class B stable, pursuant to § 61.55, shall be disposed of in accordance with the requirements of paragraphs (a)(4) through (10) of this section.

(3) Wastes designated as Class C intruder, pursuant to § 61.55, must be disposed of so that the top of the waste is a minimum of 5 meters below the surface of the cover or must be disposed of with natural or engineered barriers that are designed to protect against an inadvertent intrusion for at least 500 years.

(4) Wastes must be emplaced in an orderly manner that maintains the package integrity during emplacement and disposal.

(5) Void spaces between waste packages must be filled with earth or other material to reduce future subsidence within the fill.

(6) Waste must be placed and covered in a manner that limits the gamma radiation at the surface of the cover to levels that are within a few percent above the natural background levels of the site.

(7) The boundaries and locations of each disposal unit (e.g., trenches) must be accurately located and mapped by means of a land survey. Near-surface disposal units must be marked in such a way that the boundaries of each unit can be easily defined. Three permanent survey marker control points, referenced to United States Geological Survey (USGS) or National Geodetic Survey (NGS) survey control stations, must be established on the site to facilitate surveys. The USGS or NGS control stations must provide horizontal and vertical controls as checked against USGS or NGS record files.

(8) A buffer zone of land must be maintained between any buried waste and the disposal site boundary. The buffer zone shall extend at least 100 feet outward from the outermost waste disposal units.

(9) Adequate closure and stabilization measures must be carried out as each disposal unit (e.g., each trench) is filled and covered.

(10) Active waste disposal operations must not have an adverse effect on completed closure and stabilization measures.

(b) Facility operations and disposal site closure for land disposal facilities other than near-surface (reserved).

§ 61.53 Environmental monitoring.

(a) At the time a license application is submitted, the applicant shall have conducted a preoperational monitoring program to provide basic environmental data on the disposal site characteristics. The applicant shall obtain information about the ecology, meteorology, climate, hydrology, geology, and seismology of the disposal site. For those characteristics that are subject to seasonal variation, data must cover at least a twelve month period.

(b) During the land disposal facility site construction and operation, the licensee shall maintain a monitoring program. Measurements and observations must be made and recorded to provide data to evaluate the potential health and environmental impacts during both the construction and the operation of the facility and enable the evaluation of long-term effects and the need for mitigative measures.

(c) After the disposal site is closed, the licensee responsible for post-operational surveillance of the disposal site shall maintain a monitoring system based on the operating history and the closure and stabilization of the disposal site. The monitoring system must be capable of providing early warning of migration of radionuclides from the disposal site.

(d) The licensee must have plans for taking corrective measures if migration of radionuclides would incidate that the performance objectives of Subpart C would not be met.

§ 61.54 Alternative requirements for design and operations.

The Commission may, upon request or on its own initiative, authorize provisions other than those set forth in §§ 61.51 through 61.53 for the segregation and disposal of waste and for the design and operation of a land disposal facility on a specific basis, if it finds reasonable assurance of compliance with the performance objectives of Subpart C of this part.

§ 61.55 Waste classification.

Radioactive wastes are defined to fall within one of the following categories:

(a) *Class A segregated waste* is waste that is segregated at the disposal site and disposed of with only minimum requirements on waste form and characteristics and has the following properties:

(1) the radioisotope concentration does not exceed the values shown in Column 1, Table I, of this section; and

(2) the physical form and characteristics must meet the minimum requirements set forth in § 61.56(a).

(b) *Class B stable waste* is waste that must meet more rigorous requirements on waste form to assure stability after disposal, and has the following properties:

(1) the radioisotope concentration exceeds the concentrations shown in Column 1; and,

Table 1

Isotope	Column 1 [1]	Column 2 [2]	Column 3 [3]
Any with half-life less than 5 years	700	70,000	Theoretical maximum specific activity.
H-3	40	10[5]	Theoretical maximum specific activity.[4]
C-14	8.0	8.0	8.0.[4]
Ni-59	2.2	2.2	2.2.
Co-60	700	70,000	Theoretical maximum specific activity.
Ni-63	3.5	70	70.
Nb-94	0.002	0.002	0.002.
Sr-90	0.04	150	700.
Tc-99	0.3	0.3	0.3.[4]
I-129	0.008	0.008	0.008.[4]
Cs-135	84	84	84.
Cs-137	1.0	44	4600
Enriched Uranium	0.04	0.04	0.04.
Natural or Depleted uranium	0.05	0.05	0.05.
Alpha-emitting transuranic isotopes			10 nCi/g.
Pu-241			350 n Ci/g.

[1] Maximum concentration for Class A segregated waste. Above this, it is Class B stable waste μCi/cm³.
[2] Concentrations above which some wastes become Class C intruder waste μCi/cm³.
[3] Maximum concentration for any waste class μCi/cm³.
[4] Near-surface disposal facilities will be limited to a specified quantity for the disposal site. This quantity will be determined at the time the license is issued and will be governed largely by the characteristics of the site. Therefore, the total activity of these isotopes in each package of waste must be shown on the shipping manifest (see § 20.311 of this chapter).
For isotopes contained in metals, metal alloys, or permanently fixed on metal as contamination, the values above may be increased by a factor of ten, except natural or depleted uranium which can be the natural specific activity.
For isotopes not listed above, use the values for Sr-90 for beta emitting isotopes with little or no gamma radiation; the values for Cs-137 for beta emitting isotopes with significant gamma radiation; and the values for U-235 for alpha emitting isotopes other than radium.
Wastes containing chelating agents in concentrations greater than 0.1% are not permitted except as specifically approved by the Commission.
For mixtures of the above isotopes, the sum of ratios of an isotope concentration in waste to the concentration in the above table shall not exceed one for any waste class.
Concentrations may be averaged over volume of the package. For a 55 gallon drum multiply the concentration limits by 200,000 to determine allowable total activity.
Until establishment and adoption of other values or criteria, the values in this table (or greater concentrations as may be approved by the Commission in particular cases) shall be used in categorizing waste for near-surface disposal.

(2) The physical form and characteristics of the waste must meet the *minimum* and *stability* requirements set forth in § 61.56.

(c) *Class C intruder waste* is waste that not only must meet more rigorous requirements on waste form to assure stability but also requires special measures at the disposal facility to protect against inadvertent intrusion. This class has the following properties:

(1) The radioisotope concentrations exceed those shown in Column 2; and

(2) The physical form and characteristics meet the *minimum* and *stability* requirements set forth in § 61.56 of this part.

(d) Waste that has a radioisotope concentration that exceeds the values shown in Column 3, Table I of this section, is not generally acceptable for near-surface disposal and shall not be disposed of without specific Commission approval pursuant to § 61.58 of this part.

§ 61.56 Waste characteristics.

(a) The following requirements are *minimum* requirements for all classes of waste and are intended to facilitate handling at the disposal site and provide protection of health and safety.

(1) The waste must be packaged and the waste form and packaging must meet all applicable transportation requirements of the Commission set forth in 10 CFR Part 71 and of the Department of Transportation set forth in 49 CFR Parts 171–179, as applicable.

(2) Wastes must not be packaged for disposal in cardboard or fiberboard boxes.

(3) Waste containing liquids must be packaged in sufficient absorbent material to absorb twice the volume of the liquid.

(4) Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.

(5) Waste must not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste.

(6) Wastes must not be pyrophoric. Pyrophoric materials contained in wastes shall be treated, prepared, and packaged to be nonflammable.

(7) Wastes in a gaseous form must be packaged at a pressure that does not exceed one atmosphere at 20° C. Total activity must not exceed 100 curies per container.

(8) Wastes containing biological, pathogenic, or infectious material must be treated to reduce to the maximum extent practicable the potential hazard.

(b) The requirements in this section are intended to provide *stability* of the waste for at least 150 years. Stability is intended to assure that the waste does not degrade and promote slumping, collapse, or other failure of the disposal unit and thereby lead to water infiltration. Stability is also a factor in limiting exposure to an inadvertent

intruder, since it provides a recognizable and nondispersible waste.

(1) Waste must have structural stability. A structurally stable waste form will maintain its physical dimensions within 5% and its form, under the expected disposal conditions of compressive load of 50 psi, and factors such as the presence of moisture, and microbial activity, and internal factors such as as radiation effects and chemical changes. Structural stability can be provided by the waste form itself, processing the waste to a stable form, or placing the waste in a disposal container or structure that provides stability after disposal.

(2) Notwithstanding the provisions in § 61.56(a)(3), liquid wastes, or wastes containing liquid, must be converted into a form that contains as little free standing noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed 1% of the volume of the waste.

(3) Void spaces within the waste and between the waste and its package must be reduced to the extent practicable.

§ 61.57 Labeling.

Each package of waste must be clearly labeled to identify whether it is *Class A segregated, Class B stable,* or *Class C intruder,* in accordance with § 61.55.

§ 61.58 Alternative requirements for waste classification and characteristics.

The Commission may, upon request or on its own initiative, authorize other provisions for the classification and characteristics of waste on a specific basis, if, after evaluation, of the specific characteristics of the waste, disposal site, and method of disposal, it finds reasonable assurance of compliance with the performance objectives in Subpart C of this part.

§ 61.59 Institutional requirements.

(a) *Land ownership.* Disposal of radioactive waste received from other persons may be permitted only on land owned in fee by the Federal or a State government.

(b) *Institutional control.* The land owner or custodial agency shall carry out an active institutional control program to physically control access to the disposal site following transfer of control of the disposal site from the disposal site operator. The active control program must also include, but not be limited to, carrying out an environmental monitoring program at the disposal site, periodic surveillance, minor custodial care, and other requirements as determined by the Commission and administration of funds to cover the costs for these activities. The period of active controls will be determined by the Commission, but active controls may not be relied upon for more than 100 years following transfer of control of the disposal site to the owner.

Subpart E—Financial Assurances

§ 61.61 Applicant qualification and assurances.

Each applicant shall show that it either possesses the necessary funds or has reasonable assurance of obtaining the necessary funds, or by a combination of the two, to cover the estimated costs of conducting all licensed activities over the planned operating life of the project, including costs of construction and disposal.

§ 61.62 Funding for disposal site closure and stabilization.

(a) The applicant shall provide assurances prior to the commencement of operations that sufficient funds will be available to carry out disposal site closure and stabilization, including: (1) decontamination or dismantlement of land disposal facility structures; and (2) closure and stabilization of the disposal site so that following transfer of the disposal site to the owner, the need for ongoing active maintenance is eliminated and only minor custodial care, surveillance, and monitoring are required. These assurances shall be based on Commission approved cost estimates reflecting the Commission approved plan for disposal site closure and stabilization. The applicant's cost estimates must take into account total capital costs that would be incurred if an independent contractor were hired to perform the closure and stabilization work.

(b) In order to avoid unnecessary duplication and expense, the Commission will accept financial sureties that have been consolidated with earmarked financial or surety arrangements established to meet requirements of other Federal or State agencies and/or local governing bodies for such decontamination, closure and stabilization. The Commission will accept this arrangement only if they are considered adequate to satisfy these requirements and that the portion of the surety which covers the closure of the disposal site is clearly identified and committed for use in accomplishing these activities.

(c) The licensee's surety mechanism will be reviewed by the Commission annually to assure sufficient funds for completion of the closure plan if the work has to be performed by an independent contractor.

(d) The amount of surety liability should change in accordance with the predicted cost of future closure and stabilization. Factors affecting closure and stabilization cost estimates include: inflation; increases in the amount of disturbed land; changes in engineering plans; closure and stabilization that has already been accomplished and any other conditions affecting costs. This will yield a surety that is at least sufficient at all times to cover the costs of closure of the disposal units that are expected to be used before the next license renewal.

(e) The term of the surety mechanism must be open ended unless it can be demonstrated that another arrangement would provide an equivalent level of assurance. This assurance could be provided with a surety mechanism which is written for a specified period of time (e.g., five years) yet which must be automatically renewed unless the party who issues the surety notifies the beneficiary (the Commission) and the principal (the licensee) not less than 90 days prior to the renewal date of its intention not to renew. In such a situation the licensee must submit a replacement surety within 30 days after notification of cancellation. If the licensee fails to provide a replacement surety acceptable to the Commission, the Commission will collect on the original surety.

(f) Proof of forfeiture must not be necessary to collect the surety so that in the event that the licensee could not provide an acceptable replacement surety within the required time, the surety shall be automatically collected prior to its expiration. The conditions described above would have to be clearly stated on any surety instrument which is not open-ended, and must be agreed to by all parties. Liability under the surety mechanism must remain in effect until the closure and stabilization program has been completed and approved by the Commission and the license has been transferred to the site owner.

(g) Financial surety arrangements generally acceptable to the Commission include: surety bonds, cash deposits, certificates of deposit, deposits of government securities, escrow accounts, irrevocable letters or lines of credit, trust funds, and combinations of the above or such types of arrangements as may be approved by the Commission. However, self-insurance, or any arrangement which essentially constitutes pledging the assets of the licensee, will not satisfy the surety

requirement for private sector applicants since this provides no additional assurance other than that which already exists through license requirements.

§ 61.63 Financial assurances for institutional control.

(a) Prior to the issuance of the license, the applicant shall provide for Commission review and approval a copy of a binding arrangement, such as a lease, between the applicant and the disposal site owner that ensures that sufficient funds will be available to cover the costs of monitoring, and any required maintenance during the institutional control period. The binding arrangement will be reviewed periodically by the Commission to ensure that changes in inflation, technology and disposal facility operations are reflected in the arrangements.

(b) Subsequent changes to the binding arrangement specified in paragraph (a) of this section relevant to institutional control shall be submitted to the Commission for approval.

Subpart F—Participation by State Governments and Indian Tribes

§ 61.70 Scope.

This subpart describes mechanisms through which the Commission will implement a formal request from a State or Tribal government to participate in the review of a license application for a land disposal facility. Nothing in this subpart may be construed to bar the State or tribal-governing body from participating in subsequent Commission proceedings concerning the license application as provided under Federal law and regulations.

§ 61.71 State and tribal government consultation.

Upon request of a State or tribal government body, the Director may make available Commission staff to discuss with representatives of the State or tribal governing body information submitted by the applicant, applicable Commission regulations, licensing procedures, potential schedules, and the type and scope of State activities in the license review permitted by law. In addition, staff will be made available to consult and cooperate with the State or tribal governing body in developing proposals for participation in the license review.

§ 61.72 Filing of proposals for State and tribal participation.

(a) Following publication in the Federal Register of the notice of docketing, but no later than 120 days following docketing of an application submitted under § 61.20, a State or tribal-governing body potentially affected a near-surface disposal facility at the proposed site may submit to the Director a proposal for participation in the review of the license application. A State or tribal governing body may also submit to the Director a proposal for participation in the review of any subsequent application for license renewal or amendment.

(b) Proposals for participation in the licensing process must be made in writing and must be signed by the Governor of the State or the official otherwise provided for by State or Tribal law.

(c) At a minimum, proposals must contain each of the following items of information:

(1) A general description of how the State or tribe wishes to participate in the licensing process specifically identifying those issues it wishes to review.

(2) A description of material and information which the State or tribe plans to submit to the Commission for consideration in the licensing process. A tentative schedule referencing steps in the review and calendar dates for planned submittals should be included.

(3) A description of any work that the State or tribe proposes to perform for the Commission in support of the licensing process.

(4) A description of state or tribal plans to facilitate local government and citizen participation.

(5) A preliminary estimate of the types and extent of impact which the State expects, should be a disposal facility be located as proposed.

(6) If desired, any requests for educational or information services (seminars, public meetings) or other actions from the Commission such as establishment of additional Public Document Rooms or exchange of State personnel under the Intergovernmental Personnel Act.

§ 61.73 Commission approval of proposals.

(a) Upon receipt of a proposal submitted in accordance with § 61.72, the Director will arrange for a meeting between the representatives of the State or tribal governing body and the Commission staff to discuss the proposal and to ensure full and effective participation by the State or tribe in the Commission's license review.

(b) If requested by a State or tribal governing body, the Director may approve all or any part of a proposal if the Director determines that:

(1) The proposed activities are within the scope of Commission statutory responsibility and the type and magnitude of impacts which the State or tribe may bear are sufficient to justify their participation; and

(2) The proposed activities will contribute productively to the licensing review.

(c) The decision of the Director will be transmitted in writing to the Governor or the designated official of the tribal governing body.

(d) Upon the written request of the Governor or the tribal official, any determination of the Director under this section may be reviewed by the Commission.

Subpart G—Records, Reports, Tests, and Inspections

§ 61.80 Maintenance of records, reports, and transfers.

(a) Each licensee shall maintain any records and make any reports in connection with the licensed activities as may be required by the conditions of the license or by the rules, regulations, and orders of the Commission.

(b) Records which are required by the regulations in this Part or by license conditions must be maintained for a period specified by the appropriate regulations in this chapter or by license condition. If a retention period is not otherwise specified, these records must be maintained and transferred as a condition of license termination unless the Commission otherwise authorizes their dispostion.

(c) Records which must be maintained pursuant to this Part may be the original or a reproduced copy of microfilm if this reproduced copy or microfilm is capable of producing a clear and legible copy.

(d) If there is a conflict between the Commission's regulations in this part, license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the longest retention period specified takes precedence.

(e) Notwithstanding paragraphs (a) through (d) of this section, copies of records of the location and the quantity of radioactive wastes contained in the disposal site must be transferred upon license termination to the chief executive of the nearest municipality, the chief executive of the county in which the facility is located, the county zoning board or land development and planning agency, the state governor and other State, local and Federal governmental agencies as designated by

the Commission at the time of license termination.

(f) Each licensee shall comply with the reporting requirements of § 30.55 of this chapter, § 40.64 of this chapter, and § 70.53 and § 70.54 of Part 70 of this chapter if the quantities or activities of materials received or transferred exceed the limits of these sections. Inventory reports are not required for materials after disposal.

(g) Each licensee authorized to dispose of radioactive waste received from other persons, shall, upon each issuance of its annual financial report, if any, including any certified financial statements, file a copy thereof with the Commission in order to update the information base for determining financial qualifications.

(h)(1) Each licensee authorized to dispose of waste materials received from other persons, pursuant to this part, shall submit annual reports to the appropriate Commission regional office shown in Appendix D of Part 20 of this chapter, with copies to the Director of the Office of Inspection and Enforcement and the Director of the Division of Waste Management, USNRC, Washington, D.C. 20555. Reports shall be submitted by the end of the first calendar quarter of each year for the preceding year; (2) the reports shall include (i) specification of the quantity of each of the principal radionuclides released to unrestricted areas in liquid and in airborne effluents during the preceding year, (ii) the results of the environmental monitoring program, (iii) a summary of licensee disposal site maintenance activities, (iv) summary of activities and quantities of radionuclides disposed of, (v) any instances in which observed site characteristics were different from those described in the application for a license, and (vi) any other information the Commission may require. If the quantities of radioactive materials released during the reporting period, monitoring results, or maintenance performed are significantly different from those expected in the materials previously reviewed as part of the licensing action, the report must cover this specifically.

(i) Each licensee shall report in accordance with the requirements of § 70.52 of this chapter.

(j) Any transfer of byproduct, source, and special nuclear materials by the licensee is subject to the requirements in § 30.41 of Part 30 of this chapter, § 40.51 of Part 40 of this chapter, and § 70.42 of Part 70 of this chapter. Byproduct, source and special nuclear material means materials as defined in these Parts, respectively.

§ 61.81 Tests at land disposal facilities.

(a) Each licensee shall perform, or permit the Commission to perform, any tests as the Commission deems appropriate or necessary for the administration of the regulations in this Part, including tests of:

(1) Radioactive wastes and facilities used for the receipt, storage, treatment, handling and disposal of radioactive wastes;

(2) Radiation detection and monitoring instruments; and

(3) Other equipment and devices used in connection with the receipt, possession, handling, treatment, storage, or disposal of radioactive waste.

§ 61.82 Commission inspections of land disposal facilities.

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect radioactive waste and the premises, equipment, operations, and facilities in which radioactive wastes are received, possessed, handled, treated, stored, or disposed.

(b) Each licensee shall make available to the Commission for inspection, upon reasonable notice, records kept by it pursuant to the regulations in this chapter. Authorized repesentatives of the Commission may copy, for the Commission's use, any record required to be kept pursuant to this part.

§ 61.83 Violations.

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Act, or section 206 of the Energy Reorganization Act of 1974, or any rule.

The following amendments are also made to existing parts of the regulations in this chapter.

PART 2—RULES OF PRACTICE

2. In § 2.101, paragraph (a)(2), (b), and (d) are revised to read as follows:

§ 2.101 Filing of application.

(a) * * *

(2) Each application for a license for a facility will be assigned a docket number. However, to allow a determination as to whether an application for a construction permit or operating license for a production or utilization facility is complete and acceptable for docketing, it will be initially treated as a tendered application after it is received and a copy of the tendered application will be available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. Generally, that determination will be made within a period of thirty (30) days.

* * * * *

(b) Each application for a license to receive radioactive waste from other persons for disposal under Part 61 of this chapter and the accompanying environmental report shall be processed in accordance with the provisions of this paragraph.

(1) To allow a determination as to whether the application or environmental report is complete and acceptable for docketing, it will be initially treated as a tendered document, and a copy will be available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. One original and two copies shall be filed to enable this determination to be made.

(i) Upon receipt of a tendered application, the Commission will publish in the Federal Register notice of the filed application and will notify the governors, legislatures and other appropriate State, county, and muncipal officials and tribal governing bodies of the States and areas containing or potentially affected by the activities at the proposed site and the alternative sites. The Commission will inform these officials that the Commission staff will be available for consultation pursuant to § 61.71 of this chapter. The Federal Register notice will note the opportunity for interested persons to submit views and comments on the tendered application for consideration by the Commission and applicant.

(ii) The Commission will also post a public notice in a newspaper or newspapers of general circulation in the affected States and areas summarizing information contained in the applicant's tendered application and noting the opportunity to submit views and comments.

(iii) When the Director of Nuclear Material Safety and Safeguards determines that the tendered document is complete and acceptable for docketing, a docket number will be assigned and the applicant will be notified of the determination. If it is determined that all or any part of the tendered document is incomplete and therefore not acceptable for processing, the applicant will be informed of this determination and the aspects in which the document is deficient.

(2) With respect to any tendered document that is acceptable for

docketing, the applicant will be requested to (i) submit to the Director of Nuclear Material Safety and Safeguards such additional copies as the regulations in Parts 61 and 51 of this chapter require, (ii) serve a copy on the chief executive of the municipality in which the waste is to be disposed of or, if the waste is not to be disposed of within a municipality, serve a copy on the chief executive of the county in which the waste is to be disposed of (iii) make direct distribution of additional copies to Federal, State, Indian Tribe, and local officials in accordance with the requirements of this chapter and written instructions from the Director of Nuclear Material Safety and Safeguards and (iv) serve a notice of availability of the application and environmental report on the chief executives or governing bodies of the municipalities or counties which have been identified in the application and environmental report as the location of all or part of the alternative sites if copies are not distributed under paragraph (b)(2)(iii) of this section to the executives or bodies. All distributed copies shall be completely assembled documents identified by docket number. Subsequently distributed amendments, however, may include revised pages to previous submittals and, in such cases, the recipients will be responsible for inserting the revised pages. In complying with the requirements of paragraph (b) of this section the applicant shall not make public distribution of those parts of the application subject to § 2.790(d).

(3) The tendered document will be formally docketed upon receipt by the Director of Nuclear Material Safety and Safeguards of the required additional copies. Distribution of the additional copies shall be deemed to be complete as of the time the copies are deposited in the mail or with a carrier prepaid for delivery to the designated addressees. The date of docketing shall be the date when the required copies are received by the Director of Nuclear Material Safety and Safeguards. Within ten (10) days after docketing, the applicant shall submit to the Director of Nuclear Material Safety and Safeguards a written statement that distribution of the additional copies to Federal, State, Indian Tribe, and local officials has been completed in accordance with requirements of this section and written instructions furnished to the applicant by the Director of Nuclear Material Safety and Safeguards.

(4) Amendments to the application and environmental report shall be filed and distributed and a written statement shall be furnished to the Director of Nuclear Material Safety and Safeguards in the same manner as for the initial application and environmental report.

(5) The Director of Nuclear Material Safety and Safeguards will cause to be published in the Federal Register a notice of docketing which identifies the State and location of the proposed waste disposal facility and will give notice of docketing to the governor of that State and other officials listed in paragraph (b)(3) of this section and, in a reasonable period thereafter, publish in the Federal Register a notice pursuant to § 2.105 offering opportunity for a hearing to the applicant and other affected persons.

* * * * *

(d) The Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, will give notice of the docketing of the public health and safety, common defense and security, and environmental parts of an application for a license for a facility to the Governor or other appropriate official of the State in which the facility is to be located or the activity is to be conducted and will cause to be published in the Federal Register a notice of docketing of the application which states the purpose of the application and specifies the location at which the proposed activity would be conducted.

* * * * *

3. Section 2.103(a) is revised to read as follows:

§ 2.103 Action on applications for byproduct, source, special nuclear material, and operator licenses.

(a) If the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate, finds that an application for a byproduct, source, special nuclear material, or operator license complies with the requirements of the Act, the Energy Reorganization Act, and this chapter, he will issue a license. If the license is for a facility or if it is to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate, will inform the State, Indian Tribe, and local officials specified in § 2.104(e) of the issuance of the license.

* * * * *

4. Section 2.104(e) is revised to read as follows:

§ 2.104 Notice of hearing.

* * * * *

(e) The Secretary will give timely notice of the hearing to all parties and to other persons, if any, entitled by law to notice. The Secretary will transmit a notice of hearing on an application for a facility license or for a license for receipt of waste radioactive material from other persons for the purpose of disposal under Part 61 of this chapter or for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter to the governor or other appropriate official of the State and to the chief executive of the municipality in which the facility is to be located or the activity is to be conducted or, if the facility is not to be located or the activity conducted within a municipality, to the chief executive of the county (or to the Tribal organization, if it is to be so located or conducted within an Indian reservation).

5. Section 2.105(a)(2) is revised to read as follows:

§ 2.105 Notice of proposed action.

(a) * * *

(2) A license for receipt of waste radioactive material from other persons for disposal by the waste disposal licensee under Part 61 of this chapter.

* * * * *

6. Section 2.106 is amended by adding a new paragraph (d) to read as follows:

§ 2.106 Notice of issuance.

* * * * *

(d) The Director of Nuclear Material Safety and Safeguards will also cause to be published in the Federal Register notice of, and will inform the State and local officials or tribal governing body specified in § 2.104(e) of any licensing action with respect to a license to receive radioactive waste from other persons for disposal under Part 61 of this chapter or the amendment of such a license for which a notice of proposed action has been previously published.

7. Section 2.764 is amended by adding a new paragraph (e), and by revising paragraphs (a) and (b) to read:

§ 2.764 Immediate effectiveness of initial decision directing issuance or amendment of construction permit or operating license.[1]

(a) Except as provided in paragraphs (c), (d), and (e) of this section, an initial decision directing the issuance or amendment of a construction permit, a construction authorization, or an operating license shall be effective immediately upon issuance unless the presiding officer finds that good cause has been shown by a party why the initial decision should not become

immediately effective, subject to the review thereof and further decision by the Commission upon exceptions filed by any party pursuant to § 2.762 or upon its own motion.

(b) Except as provided in paragraphs (c), (d), and (e) of this section, the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, notwithstanding the filing of exceptions, shall issue a construction permit, a construction authorization, or an operating license, or amendments thereto, authorized by an initial decision, within ten (10) days from the date of issuance of the decision.

* * * * *

(e) An initial decision directing the issuance of a license under Part 61 of this chapter (relating to land disposal of radioactive waste) or any amendment to such a license authorizing actions which may significantly affect the health and safety of the public, shall become effective only upon order of the Commission. The Director of Nuclear Material Safety and Safeguards shall not issue a license under Part 61 of this chapter, or any amendment to such a license which may significantly affect the health and safety of the public, until expressly authorized to do so by the Commission.

PART 19—NOTICES, INSTRUCTIONS, AND REPORTS TO WORKERS; INSPECTIONS

§ 19.2 [Amended]

8. Section 19.2 is amended by adding "61," following "40, 60."

§ 19.3 [Amended]

9. In § 19.3, paragraph (d) is amended by adding "61," following "40, 60."

PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION

§ 20.2 [Amended]

10. Section 20.2 is amended by adding "61," following "40, 60."

§ 20.3 [Amended]

11. In § 20.3, paragraph (a)(9) is amended by adding "61," following "40, 60,"

12. In § 20.301, paragraph (a) is amended by adding "61," following "40, 60," and paragraph (b) is revised to read as follows:

§ 20.301 General requirement.

* * * * *

(b) As authorized under § 20.302 or Part 61 of this chapter; or

* * * * *

§ 20.302 [Amended]

13. In § 20.302, paragraph (b) is removed.

14. A new § 20.311 is added to read as follows:

§ 20.311 Transfer for disposal and manifests.

(a) *Purpose.* The requirements of this section are designed to control transfers and establish a manifest tracking system and supplement existing requirements concerning transfers and recordkeeping.

(b) Each shipment of radioactive waste to a licensed land disposal facility must be accompanied by a shipment manifest that contains the name, address, and telephone number of the person generating the waste as well as the name, address, and telephone number of the person transporting the waste to the land disposal facility. The manifest must also indicate as completely as practicable: the type of waste; the waste volume and mass; radionuclide identity and concentration; total radioactivity; and chemical form. The solidification agent must be specified. Wastes classified as Class A segregated, Class B stable, or Class C intruder in § 61.55 of this part chapter must be clearly identified as such in the manifest. The total quantity of noted isotopes identified in Table 1, Part 61 of this chapter must be shown.

(c) Each manifest must include a certification by the waste generator that the transported materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the Commission. An authorized representative of the waste generator shall sign and date the manifest.

(d) Any generating licensee who transfers radioactive waste to a land disposal facility or a licensed waste collector or processor shall:

(1) Prepare all wastes so that the waste is classified according to § 61.55 and meets the waste characteristics requirements in § 61.56 of this chapter;

(2) Label each package of waste to identify whatever it is, Class A segregated, Class B stable, or Class C intruder waste, in accordance with § 61.55 of this chapter;

(3) Conduct a quality assurance program to assure compliance with §§ 61.55 and 61.56 of this chapter; the program must include management audits;

(4) Prepare shipping manifests to meet the requirements of §§ 20.311 (b) and (c) of this part;

(5) Forward a copy of the manifest to the intended recipient, at the time of shipment;

(6) Include one copy of the manifest with the shipment;

(7) Retain a copy of the manifest until receipt of waste is acknowledged; and,

(8) Investigate late or missing shipments or any part of a shipment in accordance with paragraph (h) of this section.

(e) Any waste collector licensee who handles only prepackaged waste shall:

(1) Acknowledge receipt of the waste from the generator within one week of receipt;

(2) Prepare a new manifest to reflect consolidated shipments; the new manifest shall serve as a listing or index for the detailed generator manifests. Copies of the generator manifests shall be a part of the new manifest. The collector licensee shall certify that nothing has been done to the waste which would invalidate the generator's certification;

(3) Forward a copy of the new manifest to the land disposal facility operator at the time of shipment;

(4) Include the new manifest with the shipment to the disposal site;

(5) Retain a copy of the manifest until receipt of waste is acknowledged; and

(6) Investigate late or missing shipments or any part of a shipment in accordance with paragraph (h) of this section.

(f) Any licensed waste processor who treats or repackages wastes shall:

(1) Acknowledge receipt of the waste from the generator within one week of receipt;

(2) Prepare a new manifest that meets the requirements of paragraphs (b) and (c) of this section. Preparation of the new manifest reflects that the processor is responsible for the waste;

(3) Prepare all wastes so that the waste is classified according to § 61.55 and meets the waste characteristics requirements in § 61.56 of this chapter;

(4) Label each package of waste to identify whatever it is, Class A segregated, Class B stable, or Class C intruder waste, in accordance with § 61.55 of this chapter;

(5) A quality assurance program shall be conducted to assure compliance with §§ 61.55 and 61.56 of this chapter. The program shall include management audits;

(6) Forward a copy of the new manifest to the disposal site operator or waste collector at the time of shipment;

(7) Include the new manifest with the shipment;

(8) Retain copies of original manifests and new manifests until receipt of the wastes is acknowledged; and

(9) Investigate late or missing shipments in accordance with paragraph (h) of this section.

(g) The land disposal facility operator shall:

(1) Acknowledge to the shipper receipt of the waste within one week of receipt. The shipper to be notified is the licensee who last possessed the waste and transferred the waste to the operator;

(2) Following receipt and acceptance of a shipment of radioactive waste accompanied by a manifest, record on the shipment manifest the date of receipt of the waste, the date of disposal of the waste, the location in the disposal site, the condition of the waste packages as received, and any evidence of leaking or damaged packages or radiation or contamination levels in excess of limits specified in DOT and Commission regulations. The licensee shall also briefly describe any repackaging operations of any of the waste packages included in the shipment, plus any other information required by the Commission as a license condition;

(3) Sign, date, and certify that the transported materials have been received, classified, handled, stored, and disposed of in compliance with Commission regulations and all license conditions;

(4) Maintain copies of all completed manifests until the Commission authorizes their disposition at transfer; and

(5) Notify the shipper (i.e., the generator, the collector, or processor) and the Director of the nearest Commission Inspection and Enforcement Regional Office listed in Appendix D of this part when a shipment has not arrived within 60 days after the advance manifest was received.

(h) Late or missing shipments must:

(1) Be investigated by the shipper if the shipper has not received notification of receipt within 20 days after transfer; and

(2) Be traced and reported. The investigation shall include tracing the shipment and filing a report with the nearest Commission Inspection and Enforcement Regional Office listed in Appendix D of this part. Each licensee who conducts a trace investigation shall file a written report with the nearest Commission's Regional office within 2 weeks of completion of the investigation.

15. In § 20.401, paragraphs (b) and (c)(3) are revised to read as follows:

§ 20.401 Records of surveys, radiation monitoring, and disposal.

* * * * *

(b) Each licensee shall maintain records in the same units used is this part, showing the results of surveys required by § 20.301(b), monitoring required by §§ 20.205(b) and 20.205(c) and disposals made under §§ 20.302, 20.303, deleted § 20.304,[1] and Part 61 of this chapter.

(c) * * *

(3) Records of disposal of licensed materials made pursuant to §§ 20.302, 20.303, deleted § 20.304 [1]; and Part 61 of this chapter are to be maintained until the Commission authorizes their disposition.

* * * * *

16. Section 20.408 is amended by adding a new paragraph (a)(5) to read as follows:

§ 20.408 Reports of personnel monitoring on termination of employment or work.

(a) * * *

(5) Receive radioactive waste from other persons for disposal under part 61 of this chapter.

* * * * *

PART 21—REPORTING OF DEFECTS AND NONCOMPLIANCE

§ 21.2 [Amended]

17. Section 21.2 is amended by inserting "61", after "40, 60," in the third line, and after "50, 60" in the final line.

§ 21.3 [Amended]

18. In § 21.3, paragraphs (a)(3), (a)(a-1)(1), (a) (a-1)(2), and (k) are amended by adding "61," after "50, 60."

§ 21.21 [Amended]

19. Section 21.21 is amended by adding "61,"' after "50, 60," in paragraphs (b)(1)(i) and (b)(1)(ii).

PARTS 30—RULES OF GENERAL APPLICABILITY TO LICENSING OF BYPRODUCT MATERIAL

20. Section 30.11(c) is revised to read as follows:

§ 30.11 Specific exemptions.

* * * * *

(c) Except as specifically provided in Part 61 of this Chapter, any licensee is exempt from the requirements of this part to the exent that its activities are subject to the requirements of Parts 60 and 61 of this chapter.

21. In § 30.32, paragraph (f) is amended to read as follows:

§ 30.32 Application for specific licenses.

* * * * *

(f) An application for a license for the conduct of any activity which the Commission determines will significantly affect the quality of the environment shall be filed at least 9 months to commencement of construction of the plant or facility in which the activity will be conducted and shall be accompanied by any Environmental Report required pursuant to Part 51 of this chapter.

22. In § 30.33, paragraph (a)(5) is revised to read as follows:

§ 30.33 General requirements for issuance of specific licenses.

(a) * * *

(5) In the case of an application for a license for the conduct of any activity which the Commission determines will significantly affect the quality of the environment, the Director of Nuclear Material Safety and Safeguards or his designee, before commencement of construction of the plant or facility in which the activity will be conducted, on the basis of information filed and evaluations made pursuant to Part 51 of this chapter, has concluded, after weighing the environmental, economic technical, and other benefits against environmental costs and considering available alternatives, that the action called for is the issuance of the proposed license, with any appropriate conditions to protect environmental values. Commencement of construction prior to such conclusion shall be grounds for denial of a license to receive and possess byproduct material in such plant or facility. As used in this paragraph the term "commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. The term does not mean site exploration, necessary roads for site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values.

* * * * *

PART 40—LICENSING OF SOURCE MATERIAL

23. In § 40.14, paragraph (c) is revised to read as follows:

§ 40.14 Specific exemptions.

* * * * *

(c) Except as specifically provided in Part 61 of this chapter any licensee is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Parts 60 and 61 of this chapter.

24. In § 40.31, paragraph (f) is revised to read as follows:

§ 40.31 Applications for specific licenses.

* * * * *

(f) An application for a license to possess and use source material for uranium milling, production of uranium hexafluoride, or for the conduct of any other activity which the Commission determines will significantly affect the quality of the environment shall be filed at least 9 months prior to commencement of construction of the plant or facility in which the activity will be conducted and shall be accompanied by any Environmental Report required pursuant to Part 51 of this chapter.

* * * * *

25. In § 40.32, paragraph (e) is revised to read as follows:

§ 40.32 General requirements for issuance of specific licenses.

* * * * *

(e) In the case of an application for a license to possess and use source and byproduct material for uranium milling, production of uranium hexafluoride, or for the conduct of any other activity which the Commission determines will significantly affect the quality of the environment, the Director of Nuclear Material Safety and Safeguards or his designee, before commencement of construction of the plant or facility in which the activity will be conducted, on the basis of information filed and evaluations made pursuant to Part 51 of this chapter, has concluded, after weighing the environmental, economic, technical and other benefits against environmental costs and considering available alternatives, that the action called for is the issuance of the proposed license, with any appropriate conditions to protect environmental values. Commencement of construction prior to such a conclusion shall be grounds for denial of a license to possess and use source and byproduct material in such plant or facility. As used in this paragraph the term "commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. The term does not mean site exploration, necessary roads for site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values.

* * * * *

PART 51—LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

26. In § 51.5, paragraphs (a)(6) and (b)(4)(iii) are revised, paragraph (b)(6) is amended by inserting "61" following "50, 60,", and (d)(3) is amended by inserting "61" following "50, 60." The revised paragraphs read as follows:

§ 51.5 Actions requiring preparation of environmental impact statements, negative declarations, environmental impact appraisals; actions excluded.

(a) * * *

(6) Issuance of a license authorizing receipt and disposal of radioactive waste from other persons under Part 61 of this chapter;

* * * * *

(b) * * *

(4) * * *

(iii) Authorizing receipt and disposal of radioactive waste from other persons under Part 61 of this chapter.

* * * * *

§ 51.40 [Amended]

27. In § 51.40, paragraph (c) is amended by inserting "61" after "30, 40."

PART 70—DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

28. In § 70.14, paragraph (c) is amended to read as follows:

§ 70.14 Specific exemptions.

* * * * *

(c) Except as specifically provided in Part 61 of this chapter, any licensee is exempt from the requirements of the regulations in this part to the extent that its activities are subject to the requirements of Parts 60 and 61 of this chapter.

29. In § 70.21 paragraph (f) is revised to read as follows:

§ 70.21 Filing.

* * * * *

(f) An application for a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery or conversion of uranium hexafluoride, or for the conduct of any other activity which the Commission determines will significantly affect the quality of the environment shall be filed at least 9 months prior to commencement of construction of the plant or facility in which the activity will be conducted, and shall be accompanied by an Environmental Report required under Part 51 * * * of this chapter.

* * * * *

30. In § 70.23 paragraph (a)(7) is revised to read as follows:

§ 70.23 Requirements for the approval of applications.

(a) * * *

(7) Where the proposed activity is processing and fuel fabrication, scrap recovery, conversion of uranium hexafluoride, or any other activity which the Commission determines will significantly affect the quality of the environment, the Director of Nuclear Material Safety and Safeguards or his designee, before commencement of construction of the plant or facility in which the activity will be conducted, on the basis of information filed and evaluations made pursuant to Part 51 of this chapter, has concluded, after weighing the environmental, economic, technical, and other benefits against environmental costs and considering available alternatives, that the action called for is the issuance of the proposed license, with any appropriate conditions to protect environmental values. Commencement of construction prior to such conclusions shall be grounds for denial to possess and use special nuclear material in such plant or facility. As used in this paragraph the term "commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. The term does not mean site exploration, necessary roads for site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values.

* * * * *

PART 73—PHYSICAL PROTECTION OF PLANTS AND MATERIALS

31. In § 73.1, paragraph (b)(1)(iii) is revised to read as follows:

§ 73.1 Purpose and scope.

* * * * *

(b) * * *

(1) * * *

(iii) the physical protection of special nuclear material by any person who, pursuant to the regulations in parts 61 and 70 of this chapter, possesses or uses at any site or contiguous sites subject to the control by the licensee, formula quantities of strategic special nuclear material or special nuclear material of moderate strategic significance or special nuclear material of low strategic significance.

* * * * *

PART 170—FEES FOR FACILITIES AND MATERIALS LICENSES AND OTHER REGULATORY SERVICES UNDER THE ATOMIC ENERGY ACT OF 1954, AS AMENDED*

32. Section 170.2 is revised to read as follows:

§ 170.2 Scope.

Except for persons who apply for or hold the permits, licenses, or approvals exempted in § 170.11, the regulations in this part apply to a person who is an applicant for, or holder of, a specific byproduct material license issued pursuant to Parts 30 and 32–35 of this chapter, a specific source material license issued pursuant to Part 40 of this chapter, a specific materials license issued under Part 61 of this chapter, a specific special nuclear material license issued pursuant to Part 70 of this chapter, a specific approval of spent fuel casks and shipping containers issued pursuant to Part 71 of this chapter, a specific request for approval of sealed sources and devices containing byproduct material, source material, or special nuclear material, or a production or utilization facility construction permit and operating license issued pursuant to Part 50 of this chapter, to routine safety and safeguards inspections of a licensed person, to a person who applies for approval of a reference standardized design of a nuclear steam supply system or balance of plant, for review of a facility site prior to the submission of an application for a construction permit, for review of a standardized spent fuel facility design, and for a special project review, which the Commission completes or makes whether or not in conjunction with a license application on file or which may be filed.

Note.—Amendments to all parts are issued pursuant to citations of authority presently codified or, in the case of 10 CFR Part 61, as set out after the list of sections in the new Part 61.

Dated at Washington, D.C., this 21st day of July 1981.

For the U.S. Nuclear Regulatory Commission.

Samuel J. Chilk,
Secretary of the Commission.

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