

TITLE 32: ENERGY
CHAPTER II: ILLINOIS EMERGENCY MANAGEMENT AGENCY
SUBCHAPTER d: LOW LEVEL RADIOACTIVE WASTE/TRANSPORTATION

PART 606
REQUIREMENTS FOR THE DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE
AWAY FROM THE POINT OF GENERATION

| | |
|---------|------------------------------------------------------------------------------------------------------------------------------------|
| Section | |
| 606.10 | Scope |
| 606.20 | Definitions |
| 606.30 | Requirements for Design, Construction, Operation, Monitoring, and Maintenance of the Low-Level Radioactive Waste Disposal Facility |
| 606.40 | Recordkeeping Requirements |
| 606.50 | Technical Qualifications of Personnel |
| 606.60 | Financial Responsibility of Facility Operator |
| 606.70 | Contingency Plan and Emergency Procedures |
| 606.80 | Closure, Post-Closure, Maintenance, and Institutional Care |
| 606.90 | Emergency Closure |

AUTHORITY: Implementing and authorized by Section 6 of the Illinois Low-Level Radioactive Waste Management Act [420 ILCS 20/6].

SOURCE: Adopted at 12 Ill. Reg. 4824, effective March 1, 1988; amended at 12 Ill. Reg. 18171, effective October 31, 1988; amended at 15 Ill. Reg. 8958, effective June 10, 1991; amended at 18 Ill. Reg. 16584, effective November 1, 1994; recodified from the Department of Nuclear Safety to the Illinois Emergency Management Agency at 27 Ill. Reg. 13641.

Section 606.10 Scope

This Part sets out standards applicable to facilities for the disposal of low-level radioactive wastes away from the point of generation. These standards are in addition to the requirements specified in the rules of the Department of Nuclear Safety entitled "Licensing Requirements of Land Disposal of Radioactive Waste" (32 Ill. Adm. Code 601). The development and operation of a disposal facility in compliance with the requirements of this Part and 32 Ill. Adm. Code 601 would *reflect the best available management technologies which are economically reasonable, technologically feasible, and environmentally sound for the disposal of low-level radioactive waste* as required by Section 6 of the Illinois Low-Level Radioactive Waste Management Act (the Act) [420 ILCS 20].

(Source: Amended at 18 Ill. Reg. 16584, effective November 1, 1994)

Section 606.20 Definitions

Except where otherwise indicated, the terms in this Part shall have the meaning provided in 32 Ill. Adm. Code 601. In addition, the following definitions shall apply:

- a) "Accepted engineering principles and practices" means those engineering principles and practices that are used by engineers when fulfilling their requirements and duties consistent with the specific requirements of this Part and as certified by a Professional Engineer licensed under the Illinois Professional Engineering Act (Ill. Rev. Stat. 1989, ch. 111, par. 5101).
- b) "Background Level" means the alpha, beta and gamma activity of radioactive elements which occur naturally in the air, water or soils at the facility site.
- c) "Department" means the Illinois Department of Nuclear Safety.
- d) "Disposal Facility" means *a parcel of land or site, together with structures, equipment and improvements on or appurtenant to the land or site, which is used or is being developed for the disposal of low-level radioactive waste. "Facility" does not include lands, sites, structures or equipment used by a generator in the generation of low-level radioactive wastes* (Section 3 of The Act).
- e) "Disposal Module" means a discrete portion of the disposal unit, including waste, waste packages, and engineered features.
- f) "Disposal Unit" means a discrete portion of the disposal site into which waste is place for disposal.
- g) "Low-Level Radioactive Waste" (or "Waste") *means radioactive waste not classified as high-level radioactive waste as defined in Section 2 of the Nuclear Waste Policy Act of 1982, 42 U.S.C. 10101, transuranic waste, spent nuclear fuel or byproduct material as defined in Section 11e(2) of the Atomic Energy Act of 1954, 42 U.S.C. 2014. Except when otherwise indicated in the rules, low-level radioactive waste includes "mixed waste."*
- h) "Mixed Waste" means waste that *is both "hazardous waste" and "low-level radioactive waste"* as defined in this Act (Section 3 of The Act).
- i) "Shallow Land Burial" means *a land disposal facility in which radioactive waste is disposed of in or within the upper 30 meters of the earth's surface. However, this definition shall not include an enclosed, engineered, structurally re-enforced and solidified bunker that extends below the earth's surface* (Section 3 of The Act).

(Source: Amended at 15 Ill. Reg. 8958, effective June 10, 1991)

Section 606.30 Requirements for Design, Construction, Operation, Monitoring, and Maintenance of the Low-Level Radioactive Waste Disposal Facility

- a) Design and Construction of the Facility – Performance Objectives

The disposal facility shall be designed and constructed, based on accepted engineering principles and practices, to further the following performance objectives:

- 1) The design and construction of the disposal facility shall utilize *the best available technology that is economically reasonable, technologically feasible, and environmentally sound for disposal of waste*. (Section 6 of the Act)
- 2) The design of the disposal facility must be compatible with the expected waste characteristics, methods of operation, and proposed methods of closure and stabilization and shall demonstrate that the requirements of 32 Ill. Adm. Code 601 will be met.
- 3) The facility design shall allow closure in a manner that isolates the wastes and waste constituents and that requires only minor custodial care to assure long term performance.
- 4) The disposal facility shall be designed and constructed to provide for the complete containment of waste and waste constituents.
- 5) The disposal facility shall be designed and constructed to allow remedial action, if necessary. Achievement of this objective shall not be accomplished by compromising, or in any way lessening, the ability of the disposal facility to satisfy the performance objectives and requirements of this Part and of 32 Ill. Adm. Code 601.
- 6) Disposal units shall be designed so that their engineered components will maintain their structural integrity and prevent release of waste and waste constituents.

b) Design and Construction of the Facility – Requirements

- 1) The disposal facility design shall not incorporate the use of shallow land burial or underground injection wells and shall provide for the use of above-ground modules or other designs to provide greater and safer confinement of low-level radioactive waste. The disposal facility shall meet the licensing requirements of 32 Ill. Adm. Code 601.
- 2) The facility shall be designed to accept waste for disposal for a period of at least 50 years. Requisite capacity shall be based on volume and activity projections available from the Department pursuant to Section 4 of the Act. The facility shall be designed to accommodate waste generated during the decommissioning of nuclear power stations in Illinois.

- 3) The facility shall be designed for the disposal of low-level radioactive waste.
- 4) Support buildings (i.e., buildings at the facility other than those in which waste is disposed of) at the facility shall meet the following requirements:
 - A) All buildings shall be designed and constructed to be permanent in nature with an estimated lifetime of at least 60 years.
 - B) During the operational period of the facility, trailers and temporary buildings shall be limited to 12 months on site.
 - C) Buildings shall be designed, constructed and maintained in accordance with the following standards:
 - i) "Occupational Safety and Health Standards" of the Occupational Safety and Health Administration, 29 CFR 1910, Subparts A through Q and Subpart S, July 1, 1991, exclusive of subsequent amendments. A copy of this material is available for inspection at the Department.
 - ii) "Safety and Health Regulations for Construction" promulgated by the Occupational Safety and Health Administration, 29 CFR 1926, July 1, 1991, exclusive of subsequent amendments. A copy of this material is available for inspection at the Department.
 - iii) Uniform Building Code, published by the National Conference of Building Officials, current as of 1994, but exclusive of subsequent amendments or editions. Copies of this code can be obtained directly from the National Conference of Building Officials, 5360 S. Workman Mills Road, Whittier CA 90601. A copy of this code is also available for inspection at the Department.
 - iv) Uniform Mechanical Code, published by the National Conference of Building Officials, current as of 1994, but exclusive of subsequent amendments or editions. Copies of this code can be obtained directly from the National Conference of Building Officials, 5360 S. Workman Mills Road, Whittier CA 90601. A copy of this code is also available for inspection at the Department.
 - v) National Electric Code, published by the National Fire Protection Association, current as of 1993, exclusive of subsequent amendments or editions. Copies of this code

can be obtained directly from the National Fire Protection Association, Batterymarch Park, Quincy MA 02269. A copy of this code is also available for inspection at the Department.

- vi) Minimum Design Loads for Buildings and Other Structures, ASCE 7-93, current as of July 1993, exclusive of subsequent amendments or editions. Copies of the standard can be obtained directly from the American Society of Civil Engineers, 345 East 47th Street, New York, New York 10017-2398. A copy of the standard is also available for inspection at the Department.
 - vii) Local Building Codes.
 - viii) In the event that two or more building standards conflict or apply, the most stringent standard shall be met.
- 5) The disposal unit shall be designed and constructed to withstand all natural phenomena, such as precipitation, earthquakes and tornadoes, which are expected to occur for five hundred years.
- 6) The disposal unit shall meet the following design requirements:
- A) Disposal modules shall be designed and constructed to incorporate multiple engineered safety features, such as, but not limited to, placing a cover over disposal modules, using backfill that adds structural strength to the module, and reinforcing modules with manufactured materials that are independently monitored and that provide structural support, prevent the release of waste and waste constituents and prevent inadvertent intrusion (See 32 Ill. Adm. Code 601.20);
 - B) The disposal unit shall be modular, incorporating design elements that will allow operation of the facility in such a manner that the amount of waste on site that is not yet permanently disposed of, as well as the time that waste is held on site prior to disposal, will be minimized;
 - C) Disposal modules must be designed and constructed to accommodate waste that cannot be packaged in standard containers, e.g., reactor components, contaminated steel;
 - D) Disposal modules made of manufactured materials must be designed and constructed, using accepted engineering principles and practices, to ensure that the tensile stress in the manufactured

materials never exceeds the level that will cause the materials to fail. Any support provided by structural reinforcement, such as steel or rebar, shall be taken into account only if the structural reinforcement is designed and constructed to ensure maintenance of the structural reinforcement's minimum required strength for the entire design life of the disposal module;

- E) Disposal modules must be designed to maintain their structural integrity regardless of the physical form of the waste;
- F) Disposal modules shall be designed and constructed so that water cannot infiltrate and remain in contact with waste packages;
- G) Disposal modules must be constructed of materials that will not interact with each other, any surrounding earth, backfill, any cover material or base grade material in such a manner as to compromise the ability of the materials to perform their intended function;
- H) If intruder barriers are required by 32 Ill. Adm. Code 601.250(b), disposal modules must be designed and constructed, using accepted engineering practices, with intruder barriers designed to last at least 500 years; and
- I) Disposal module design shall allow characterization, modeling, analysis, and evaluation of the module's capability to contain waste.

c) Operation and Maintenance – Performance Objective

The low-level radioactive waste disposal facility shall be operated in a manner that reduces the risks associated with radiation to workers and the general public to levels that are as low as is reasonably achievable.

d) Operation and Maintenance – Requirements

- 1) The facility shall be operated in compliance with following requirements applicable to licensees of the Department: 32 Ill. Adm. Code 200, 310, 320, 330, 340, 341, 400 and 601.
- 2) Waste shall not be disposed of at the facility unless the waste complies with the applicable waste form standards. Any waste received that is not in compliance with these standards shall either be treated prior to disposal or returned to the generator or broker, provided the waste packages comply with the packaging requirements of 32 Ill. Adm. Code 341. Wastes may be treated at the disposal facility only if the operator is licensed to engage in treatment activities. If the waste packages are not in

compliance with 32 Ill. Adm. Code 341, the operator shall either repack the waste for return or treat the waste so that it is in a form which is acceptable for disposal. The generator or broker who shipped the waste to the disposal facility shall be liable for any expense incurred due to repackaging or processing unacceptable waste forms, or for expenses incurred in shipping the waste back to the generator if required.

AGENCY NOTE: Pursuant to Section 7 of the Illinois Low-Level Radioactive Waste Management Act [420 ILCS 20/7], the Department will be promulgating rules setting forth waste form standards.

- 3) Waste shall not be disposed at the facility unless the waste is accompanied by a proper manifest. In the event that waste is received at the facility without a proper manifest, the operator shall notify the Department and contact the shipper to obtain a proper manifest. In the event that a proper manifest cannot be obtained, the facility operator shall take such other action as the Department requires, such as, but not limited to, analyzing the contents of the unmanifested shipment and preparing a manifest reflecting the results, and with the approval of the Department, based on requirements contained in the license and the Department's rules, disposing of the waste, in accordance with the requirements imposed by the facility license, at the shipper's expense.
- 4) The facility shall be operated so that no person outside the facility boundary receives a radiation dose in excess of 10 micro Sv (1 mrem) per year to the whole body as a result of the facility operations.
- 5) To the extent practicable, wastes shall be disposed of in containers of standard size and shape.
- 6) The facility shall be operated in a manner that reduces the amount of waste on site that has not yet been permanently disposed of and that minimizes the time the waste is held on site prior to disposal.
- 7) The facility operator shall provide personnel, equipment and procedures for acquiring environmental samples and conducting on-site tests to detect any releases of radionuclides into the air, soil, water and groundwater, as well as for monitoring occupational dose in accordance with 32 Ill. Adm. Code 340, Subpart F. In addition, the facility operator shall provide for environmental sampling and testing to detect releases of waste or waste constituents into the air, soil and water which are either, listed as hazardous in Subpart D of 40 CFR 261, or cause the waste to exhibit any of the hazardous waste characteristics identified in Subpart C of 40 CFR 261. 40 CFR 261 is incorporated as of July 1, 1993, exclusive of subsequent amendments or editions. A copy of 40 CFR 261 is available for inspection at the Department of Nuclear Safety.

- 8) The facility operator shall not accept waste at the facility until the waste shipment has been inspected and approved by the Department, as required by Section 9(e) of the Act. The operator shall provide office space, not smaller than 20 feet by 20 feet, in a building located near the gate where waste is received, to be used by the resident inspector from the Department. The operator will maintain the building and supply electricity, heat, air conditioning, water and restroom facilities.
 - 9) The facility operator shall maintain a direct data link with the Department's offices in Springfield and shall transmit to the Department facility records regarding the receipt, handling and disposition of low-level radioactive waste as required by this Part.
 - 10) The facility operator shall maintain a public documents room.
 - 11) The facility operator shall maintain a public information center in the community where the facility is located.
 - 12) The facility operator shall make all records of facility operations available upon request of the Department pursuant to its authority under Section 8 of the Act and Section 27 of the Radiation Protection Act of 1990 [420 ILCS 40/27], and shall provide access to every part of the facility to representatives of the Department.
- e) **Facility Monitoring – Performance Objective**
The low-level radioactive waste disposal facility shall include a monitoring system, which, based on accepted engineering principles and practices, is capable of determining compliance with this Part and 32 Ill. Adm. Code 601.
- f) **Facility Monitoring – Requirements**
- 1) The disposal facility shall include a monitoring system for detecting releases of radioactive or hazardous material within the disposal modules during facility operations.
 - 2) The disposal facility shall include a monitoring system for detecting releases of radioactive or hazardous materials from the disposal unit.
 - 3) The disposal facility shall include a monitoring system capable of detecting releases of radioactive or hazardous materials from the facility.
 - 4) The disposal facility shall include a monitoring system capable of detecting releases into the air, soil, surface water and groundwater.
- g) **Maintenance**

- 1) The facility operator shall conduct a program of in-situ testing of the design and construction of disposal modules. The in-situ testing program shall continue during the period of operation and closure. The program shall be designed to provide additional information regarding the expected long term performance of the facility, to identify any deficiencies or defects in design and construction of disposal units, and to form the basis for recommending changes in design, construction and operation of the facility that would increase the safety or efficiency of waste disposal.
- 2) The facility operator shall, at all times, maintain the facility structures and equipment to promote occupational safety and worker protection, and to assure uninterrupted operation of the facility.

(Source: Amended at 18 Ill. Reg. 16584, effective November 1, 1994)

Section 606.40 Recordkeeping Requirements

a) Annual Report

The facility operator shall submit an annual report to the Director of the Department and shall place a copy of the report in the public documents room. This report shall contain, but need not be limited to, the following:

- 1) A summary of the sources, volumes, curie contents, and types of low-level radioactive waste received at the facility in the previous year and an inventory of the total volume and curie content of wastes disposed of at the facility since it commenced operation;
- 2) A summary of facility operations;
- 3) A description of any incidents in which radioactive materials were or could have been released, or accidents, as well as a description of any occupational exposures in excess of the limits set by 32 Ill. Adm. Code 340 which occurred during the previous year to the whole body, as a result of the facility operations;
- 4) A description of the environmental and personnel monitoring programs and the results of those programs;
- 5) A description of the status and adequacy of plans for closing the facility, actively maintaining the facility for a period of not less than 10 years following closure, and providing institutional care of the facility, specifying and considering information learned as a result of the program of in-situ testing and other facility operations during the previous year;
- 6) An accounting of the fees collected by the facility operator for deposit by

the Department into the "Low-Level Radioactive Waste Facility Closure, Post-Closure Care and Compensation Fund," established by Ill. Rev. Stat., ch. 111½, par. 241-14(b). The accounting shall be performed using the accounting standards of the Financial Accounting Standards Board of the American Institute of Certified Public Accountants, current as July 1, 1987, exclusive of subsequent amendments or editions;

- 7) The results of the program for in-situ testing and evaluation of disposal unit design and construction, and recommendations; and
 - 8) A description of any events that would jeopardize the continued safe operation of the facility.
- b) **Unmanifested Waste Report**
The facility operator shall notify the Department inspector, immediately of any waste received at the facility that is unaccompanied by a proper manifest. In the inspector's absence, the operator shall notify the Department by telephone or telegraph within 24 hours of receipt.
- c) **Closure and Remedial Action Fund Status Reports**
The facility operator shall submit quarterly reports on the amounts, status, and adequacy of liability coverage and funds available for closing the facility and implementing the contingency plan.
- d) **Accident Report**
The facility operator shall provide a written report to the Department within seven days of any event resulting in either a release of radioactive material from a disposal unit or a radiation dose to any person outside the facility in excess of 1 millirem per year to the whole body. The report shall include:
- 1) A description of the release, resulting exposures and impacts;
 - 2) A description of the events causing such releases or exposures;
 - 3) A description of the remedial action taken; and
 - 4) A description of actions that will be taken to prevent such events from occurring in the future.

Section 606.50 Technical Qualifications of Personnel

- a) Personnel developing the facility shall meet the requirements listed below. The qualifications listed below are set forth as minimum requirements for the organization and must be met collectively, but not necessarily met by a single individual:

1) Project Manager

The Project Manager must have previous managerial experience on a project of similar magnitude and complexity (i.e., a project of similar budget, duration, staffing and regulatory complexity). In addition, the Project Manager must have been manager of a project which involved supervision of at least 30 professional (engineering or other technical) employees. Additionally, the Project Manager must be familiar with federal, state and local requirements applicable to radioactive or hazardous waste disposal, or with radioactive materials licensing. The Project Manager's familiarity with these regulatory requirements shall have been obtained through involvement on previous projects.

2) Senior Project Engineer – The Senior Project Engineer shall:

- A) Be a Registered Professional Engineer, registered in Illinois by the Department of Professional Regulation in accordance with the Illinois Professional Engineering Act (Ill. Rev. Stat. 1985, ch. 111, par. 5101, et seq.) or be a Registered Professional Engineer in another state and be eligible for reciprocal registration within six months; and
- B) Have been a senior engineer on at least 2 other engineering projects of similar complexity and magnitude (i.e., projects of similar budget, duration, magnitude and regulatory complexity) as the proposed project.

3) Mechanical Engineer

The mechanical engineer, if utilized, shall:

- A) Be a Registered Professional Engineer registered in Illinois by the Department of Professional Regulation in accordance with the Illinois Professional Engineering Act (Ill. Rev. Stat. 1985, ch. 111, par. 5101, et seq.) or be a Registered Professional Engineer in another state and be eligible for reciprocal registration within six months; or
- B) Have a degree in mechanical engineering and at least 5 years experience as a mechanical engineer.

4) Geotechnical or Civil Engineer

The geotechnical or civil engineer shall:

- A) Be a Registered Professional Engineer registered in Illinois by the Department of Professional Regulation in accordance with the Illinois Professional Engineering Act (Ill. Rev. Stat. 1985, ch. 111, par. 5101, et seq.) or be a Registered Professional Engineer in another

state and be eligible for reciprocal registration within six months;
or

- B) Have a degree in geotechnical or civil engineering and at least 5 years experience as a geotechnical or civil engineer.

5) Structural Engineer

At a minimum, the structural engineer shall:

- A) Be Registered Structural Engineers, registered in Illinois by the Department of Professional Regulation in accordance with the Illinois Structural Engineering Act (Ill. Rev. Stat. 1985, ch. 111, par. 6501, et seq.), or be a Registered Structural Engineer in another state and be eligible for reciprocal registration within six months; and
- B) Shall have at least 10 years of experience in reinforced concrete design and construction.

6) Geohydrologist

The geohydrologist shall either:

- A) Hold a Master's Degree in geology or geohydrology, and have at least 5 years experience as a geohydrologist; or
- B) Hold a bachelor's degree in geology and have at least 8 years of experience as geohydrologist.

7) Environmental Scientist

The environmental scientist shall:

- A) Hold an advanced degree (Ph.D., M.A. or M.S.) in Environmental Science or related natural or physical science (e.g., chemistry, biology, or physics); and
- B) Have at least 5 years experience in evaluating and mitigating environmental impacts.

8) Health Physicists

- A) Design, Development and Planning of Operation

The health physicist shall either:

- i) Be certified by the American Board of Health Physics, 800 W. Parkdrive, Suite 400, McLean, Va. 22101, in

accordance with that organization's standards for certification in effect on January 1, 1988. A copy of these standards is available from the Department;

- ii) Hold a Doctorate (Ph.D.) in health physics or physics and have at least three years of applied radiation protection experience; or
- iii) Hold a Master's (M.S., M.A.) degree in health physics or physics and have at least five years of applied radiation protection experience.

B) Operation

The health physicist shall either:

- i) Be certified by the American Board of Health Physics, 800 W. Parkdrive, Suite 400, McLean, Va., 22101, in accordance with that organization's standards for certification in effect on January 1, 1988. A copy of these standards is available from the Department;
- ii) Hold a Doctorate (Ph.D.) in health physics or physics and have at least three years of applied radiation protection experience;
- iii) Hold a Master's (M.S., M.A.) degree in health physics or physics and have at least five years of applied radiation protection experience; or
- iv) Hold a Bachelor's (B.S., B.A.) degree in health physics or in a natural or physical science, and have at least eight years of applied radiation protection experience.

9) Radiochemist

The radiochemist shall:

- A) Hold an advanced degree (Ph.D., M.A., M.S.) in radiochemistry or chemistry; and
- B) Have at least 5 years experience working in a radiochemistry laboratory.

10) Community Liaison

The community liaison shall have either:

- A) An advanced degree (M.S., M.A., Ph.D.) in public administration

or a related field (e.g., public affairs, technology and public policy) and a minimum of three years experience in conducting public participation programs, particularly those involving the siting and of locally controversial land uses; or

B) A bachelor's degree (B.A., B.S.) in public administration or a related field and a minimum of five years experience in conducting public participation programs, particularly those involving the siting of locally controversial land uses (such as prisons or sanitary landfills).

b) Personnel operating facility:

In addition to individuals listed in subsection (a), the operator shall have a comptroller and a management information services staff that meets the following qualifications:

- 1) Comptroller – The comptroller shall be experienced in managing projects of similar budget size and complexity of the proposed project. The comptroller shall hold a degree in accounting and shall have at least 5 years experience.
- 2) Information Management Services Specialist
The information management specialist shall hold a bachelor's or graduate level degree in computer science or in Information Management and shall have at least three years of computer programming experience.

c) All personnel shall have training in the following:

- 1) The characteristics of radiation;
- 2) The significance of radiation dose;
- 3) The levels of radiation from sources of radiation;
- 4) Methods of controlling radiation dose, including working time, working distances, and shielding;
- 5) Use of personnel monitoring equipment; and
- 6) The operator's operating and emergency procedures.

Section 606.60 Financial Responsibility of Facility Operator

a) The facility operator shall meet either of the following tests to establish that it has the financial resources necessary to meet its financial obligations established under 32 Ill. Adm. Code 601, and the Illinois Low-Level Radioactive Waste

Management Act.

- 1) Test One: The operator must have:
 - A) Two of the following three ratios: a ratio of total liabilities to net worth less than 2.0; a ratio of the sum of net income plus depreciation, depletion and amortization of total liabilities greater than 0.1; and a ratio of current assets to current liabilities greater than 1.5; and
 - B) Net working capital and tangible net worth each at least six times the sum of the closure and post-closure costs estimates provided in the license application as required by 32 Ill. Adm. Code 601.310; and
 - C) Tangible net worth of at least \$10 million; and
 - D) Assets in the United States amounting to at least 90 percent of its total assets or at least six times the sum of the closure and post-closure estimates contained in license application.
 - 2) Test Two: The operator must have:
 - A) A current rating for its most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor or Aaa, Aa, A or Baa as issued by Moody; and
 - B) Tangible net worth at least six times the sum of the closure and post-closure cost estimates contained in the license application as required by 32 Ill. Adm. Code 601.310; and
 - C) Tangible net worth of at least \$10 million; and
 - D) Assets located in the United States amounting to at least 90 percent of its total assets or at least six times the sum of the closure and post-closure cost estimates contained in the proposal.
- b) When determining whether the facility operator has satisfied the financial requirements of subsection (a), the Department shall apply the accounting standards of the Financial Accounting Standards Board of the American Institute of Certified Public Accountants current as of July 1, 1987, exclusive of subsequent amendments or editions.
 - c) The facility operator shall *post a performance bond with the Department or show evidence of liability insurance or other means of establishing financial responsibility in an amount sufficient to adequately provide for any necessary*

remedial actions or liabilities that might be incurred by the operation of a facility during the operating period and during a reasonable period of post-closure care (Section 6(b) of The Act).

(Source: Amended at 15 Ill. Reg. 8958, effective June 10, 1991)

Section 606.70 Contingency Plan and Emergency Procedures

- a) Purpose and Implementation of Contingency Plan
 - 1) The operator must have contingency plan for the facility. The contingency plan must be designed to minimize risks to human health and the environment from fires, explosions or any unplanned release, sudden or gradual, of waste or waste constituents to air, soil, surface water, and groundwater. The plan must also be designed to minimize risks or consequences that would result from temporary or premature closure of the disposal facility.
 - 2) The provisions of the contingency plan must be carried out immediately whenever there is a fire, explosion, release of waste or waste constituents to the environment, or whenever there is an unscheduled closure of the facility, either temporary or permanent.
- b) Content of Contingency Plan; Procedures
 - 1) The facility operator shall prepare a contingency plan which provides the response action to be taken in the event that there is a release of radionuclides, there is a temporary inability to dispose of wastes at the facility (e.g., because the facility has been closed temporarily), or the facility is permanently closed. Plans shall be specific to the particular contingency being addressed and shall include at a minimum the specific information required by subsection (b)(2).
 - 2) The facility operator shall consult with the Department and the Illinois Emergency Services and Disaster Agency and prepare a contingency plan to respond to a potential release of radionuclides. Local authorities shall also be encouraged to assist in the preparation of the contingency plan. At a minimum, this plan shall contain the following:
 - A) A description of the licensee's facility and the area near the site;
 - B) An identification of each type of accident for which protective actions for the public may be needed;
 - C) An analysis of the potential doses to the public from each type of accident;

- D) Identification of the means of detecting each type of accident in a timely manner;
- E) A description of the procedures and equipment for mitigating the consequences of each type of accident, including equipment provided to protect workers on-site;
- F) A description of the methods and equipment used to monitor and evaluate releases of radioactive materials;
- G) A description of the responsibilities of the operator's personnel should an accident occur, including identification of personnel responsible for notifying off-site authorities and notifying the Department;
- H) A description of the means for notifying immediately off-site authorities and for requesting off-site assistance resources;
- I) A description of the methods for assuring that recommended protective actions and distances are communicated to response organizations and the public;
- J) A description of instructions the operator would give to fire, police, medical, and other emergency personnel;
- K) A description of the means for restoring the facility to a condition that is consistent with the provisions of this Part, Part 601, and the terms of the facility license, after an accident and for remediating releases to unrestricted areas to background levels;
- L) Provisions for conducting on-site drills prior to initial receipt of waste for disposal, at least once annually thereafter, and within 30 days after any amendment of the contingency plan which is required by subsection (d)(1)(A), (B), or (C). Local fire, police, medical and other personnel who might be called upon in an emergency shall be allowed to participate in the drills;

c) Copies of Contingency Plan

A copy of the contingency plan and all revisions to the plan must be:

- 1) Maintained at the facility;
- 2) Submitted to the Department;

- 3) Submitted to the Illinois Emergency Services and Disaster Agency; and
- 4) Submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that might be called upon to provide emergency services.

d) Amendment of Contingency Plan

- 1) The contingency plan must be reviewed and immediately amended, if necessary to maintain compliance with this Section, whenever:
 - A) The facility license is revised;
 - B) The existing contingency plan fails when actually applied;
 - C) The facility changes in a way that materially increases the potential for fires, explosions or releases of waste or waste constituents (e.g., a change of manufactured materials used, a change in facility design) or changes the response necessary in the event of an emergency;
 - D) The list of emergency coordinators changes; or
 - E) The list of emergency equipment changes.
- 2) If the contingency plan is amended to comply with subsections (d)(1)(A), (B), or (C), the complete plan, as amended, shall be distributed to those entities identified in subsection (c) above. If the plan is amended to comply with subsections (d)(1)(D) or (E), only the revised lists need be distributed.
- 3) The contingency plan shall be reviewed and revised as necessary, at least once every five years.

e) Emergency Coordinator

- 1) At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within 60 minutes) who is responsible for coordinating all emergency response measures.
- 2) This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility and the facility layout. In addition, this person must have the authority to commit the resources needed to carry

out the contingency plan. The emergency coordinator must also be competent to carry out responsibilities as described in subsection (b).

Section 606.80 Closure, Post-Closure, Maintenance, and Institutional Care

- a) Closure, Post-Closure, Maintenance and Institutional Care – Performance Objective:
 - 1) The facility shall be closed in a manner that isolates waste and requires only minor custodial care for ongoing maintenance to assure long term performance.
 - 2) The facility shall be closed in a manner which considers future beneficial uses, so documented in the provisions required under 32 Ill. Adm. Code 605, of the site and surrounding areas consistent with 32 Ill. Adm. Code 605.70(b). This objective shall not be accomplished by any method which compromises, or in any way, lessens the ability of the facility to be closed in accordance with other objectives and requirements of this Part and 32 Ill. Adm. Code 601.

- b) Closure, Post-Closure, Maintenance and Institutional Care Requirements:
 - 1) Closure Plan – The facility operator shall prepare a closure plan prior to constructing the facility. The plan shall be consistent with the performance objectives of this Part and 32 Ill. Adm. Code 601, and shall include, but need not be limited to the following:
 - A) A procedure for disposal of all waste and contaminated equipment remaining on site at the time of closure, removal of structures and equipment, and installation of permanent markers;
 - B) An estimate of the funds needed to close the facility, and provisions for assuring the availability of those funds pursuant to 32 Ill. Adm. Code 601, and Section 14(b) of The Act;
 - C) A description of how the facility closure will satisfy the performance objectives of this Section and the requirements of 32 Ill. Adm. Code 601;
 - D) A description of the permissible users of the facility and buffer zone following any closure; and
 - E) A description of the monitoring systems to be implemented during the closure, post-closure, and institutional control periods.
 - 2) Closure Funds – The facility operator shall maintain or provide for the

availability of funds sufficient to implement the closure plan. The amount of the funds shall be based on the assumption that an independent contractor other than the facility operator, will be hired to implement the plan. Mechanisms for assuring that closure funds are available are as specified in 32 Ill. Adm. Code 601.310(g).

3) Disposal Module Closure:

- A) The facility operator shall close each disposal module as it reaches its designed waste capacity, or sooner, if needed for safe operation, e.g., to avoid unnecessarily subjecting open modules to freeze/thaw cycles, or to avoid unnecessary worker exposures. Closures shall be in accordance with the plan for facility closure and pursuant to a license amendment granted by the Department in accordance with 32 Ill. Adm. Code 601.
- B) The facility operator shall submit an application to the Department for a license amendment to close each disposal module not more than 90 days or less than 30 days prior to any anticipated closure.
- C) Not later than 30 days following any disposal unit closure, the facility operator shall certify in writing to the Department that the disposal unit has been closed in accordance with the requirements of this Part.

4) Facility Closure:

- A) The facility operator shall close the facility at the end of its operating lifetime.
- B) Not more than two years nor less than one year prior to anticipated facility closure, the facility operator shall submit an application to the Department for a license amendment to close the facility.
- C) Upon granting of the license amendment, the facility operator shall close the facility in accordance with the closure plan and the license conditions imposed.
- D) Within six months of completing facility closure, the facility operator shall certify in writing to the Department that the facility has been closed in accordance with the requirements of this Part.

c) Post-Closure Active Maintenance Requirements:

- 1) Post-Closure Active Maintenance Plan – The facility operator shall prepare, prior to constructing the facility, a plan for active facility

maintenance. The plan shall be consistent with the performance objectives of this Part and 32 Ill. Adm. Code 601, and shall include, but need not be limited to:

- A) A procedure for accepting, and evaluating, the performance of both engineered and natural barriers to radionuclide release or migration at the facility.
- B) A procedure for monitoring the air, soil, surface water, and groundwater at the facility site.
- C) A procedure for confirming that the facility will meet the long term performance objectives of this Part or the requirements of 32 Ill. Adm. Code 601.
- D) A procedure for identifying potential failure to meet the performance objectives of this Part or the requirements of 32 Ill. Adm. Code 601.
- E) A procedure for correcting any condition that would result in a failure to meet the performance objectives of this Part or the performance objectives of 32 Ill. Adm. Code 601.
- F) An estimate of the funds needed to implement the plan for a period of ten years.

2) Post-Closure Active Maintenance:

- A) The facility operator shall conduct a program for active site maintenance for a ten year period following facility closure.
- B) The operator shall remain at the facility site, inspect and repair engineered barriers, as necessary, maintain site security, and continue the program of facility monitoring and reporting to the Department.

d) Institutional Care and Monitoring: Requirements

- 1) Institutional Care and Maintenance Plan – The facility operator shall prepare, prior to constructing the facility, a plan for the long term care, maintenance, and monitoring of the facility. The plan shall describe the activities to be taken by the site owner following the ten year period of active maintenance by the facility operator and after transfer of title and custody and termination of the facility license. The plan shall be consistent with the performance objectives of this Part and 32 Ill. Adm. Code 601, and shall include but need not be limited to the following:

- A) A procedure for monitoring the air, soil, surface, and groundwater at the facility site, and in the vicinity of the facility site.
 - B) Plans for taking remedial action in the event that the facility fails to meet the performance objectives of this Part and 32 Ill. Adm. Code 601.
 - C) An estimate of the costs necessary to carry out the institutional monitoring plan for a period of 300 years.
 - D) An estimate of the costs of implementing the remedial action plans.
- e) Transfer of Custody – At the end of the post-closure care and maintenance period, the facility operator shall submit a report to the Department regarding the projected long term performance of the facility and shall apply for a license amendment, in accordance with the requirements of 32 Ill. Adm. Code 601.170, for termination of the license and transfer of title and custody of the facility to the State of Illinois.

(Source: Amended at 12 Ill. Reg. 18171, effective October 31, 1988)

Section 606.90 Emergency Closure

- a) Upon finding that immediate closure of the facility is necessary to avoid an imminent threat to the public health or safety, or the environment, the Director of the Department shall issue an emergency closure order to the facility operator. An emergency closure order may be issued by the Director in the event of either:
 - 1) A finding of non-compliance with any applicable regulation of the Department, if such non-compliance is determined by the Director to pose a risk of a release of radioactive material beyond the site boundary in excess of any applicable limit imposed by 32 Ill. Adm. Code 340, or an occupational dose in excess of the performance standards imposed by 32 Ill. Adm. Code 601 and this Part; or
 - 2) A finding that continued operation of the facility represents *a significant and immediate threat to the public health or safety, as evidenced by a violation of any provisions of the Radiation Protection Act of 1990 or Illinois Low-Level Radioactive Waste Management Act or any code, rule, regulation or order promulgated under these Acts, and that requires immediate action to protect the public welfare* (Section 38 of the Radiation Protection Act of 1990 [420 ILCS 40/38] and Section 8 of the Act).

- b) Upon receipt of a written order requiring immediate closure, the facility operator shall immediately take the following actions:
- 1) Implement the contingency plan required by Section 606.70;
 - 2) Notify all persons holding a site use permit or similar evidence of permission to use the facility; and
 - 3) Notify the Central Midwest Interstate Low-Level Radioactive Waste Commission.

(Source: Amended at 18 Ill. Reg. 16584, effective November 1, 1994)