

ASSESSING THE IMPACTS OF LOWERING THE RADIOACTIVITY LIMIT DEFINITION OF TRU WASTE FROM 100 nCi/g to 10 nCi/g

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ABSTRACT

This paper addresses the possible ramifications of lowering the radioactive concentration level of transuranic (TRU) waste from 100 nanocuries per gram (nCi/g) to 10 nCi/g. It is this concentration level that distinguishes TRU waste from low-level waste (LLW). This discussion focuses on impacts to the national radioactive waste operations, administration, and management and inconsistencies with definitions as defined by the U.S. Congress and implemented by the Nuclear Regulatory Commission (NRC), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Energy (DOE).

FINDINGS AND CONCLUSIONS

The impetus for changing the definition of TRU waste comes from not being able to dispose of LLW containing hazardous materials identified in the Resource Conservation and Recovery Act (RCRA) (1) and alpha-emitting radionuclides in concentrations between 10 and 100 nCi/g without treatment to RCRA Land Disposal Restrictions (LDR). Because disposal at the Waste Isolation Pilot Plant (WIPP) does not require treatment to LDR and some of the RCRA-regulated LLW (mixed LLW) in the DOE system could meet the WIPP Waste Acceptance Criteria (WAC) with adjustment to the definition of TRU waste in the Waste Isolation Pilot Plant Land Withdrawal Act, as amended (LWAA) (2), it is perceived to be less costly to dispose of this waste at WIPP than to treat to RCRA LDR. However, the total cost is considered to be substantial, as discussed below. Because of the potential impacts to existing laws and to the regulatory system, the expected increase in volume of waste beyond the WIPP allowable capacity, the additional system cost, and increased risk, ***TRU waste should not be redefined at an activity concentration of 10 nCi/g.***

Decreasing the radioactivity concentration level for TRU waste would require LLW having alpha-emitting radionuclides that assay between 10 and 100 nCi/g to be disposed at WIPP without treatment to LDR if it meets the WIPP WAC. Some of the mixed LLW, particularly at the smaller quantity sites, could be directly disposed at WIPP without expensive treatment to RCRA LDR for surface disposal, or concentrated to 100 nCi/g making TRU waste for disposal at WIPP.

Waste not meeting the WIPP WAC would still require some form of treatment before disposal. such as repackaging, drying, or advanced treatment that could be as, or more expensive than LDR treatment and surface disposal. Examples are wastes that exceed allowable liquid content, are ignitable, contain polychlorinated biphenyls (PCBs), or for other reasons do not meet the WIPP WAC.

The stored and projected TRU waste inventories and quantity of waste to be disposed at WIPP would be increased, which could increase costs and risks to the public, workers, and environment. The total volume of TRU waste would be increased by approximately 10% of the total TRU waste disposal capacity of WIPP, not including the potentially large, and presently unknown, quantities of environmental restoration (ER) and decontamination and decommissioning (D&D) LLW having alpha-emitting radionuclides that would require disposal at WIPP. This includes non-mixed LLW that can safely and economically be placed in surface disposal facilities. The additional volumes of waste qualifying for disposal at WIPP could require retrieval from existing LLW disposal cells and require more extensive characterization to meet WIPP WAC. Unnecessarily handling and preparing LLW, which has been determined safely disposed, for alternated disposal would increase risks to the health and safety of the public, workers, and the environment. Any volume of LLW or mixed LLW having alpha-emitting radionuclides and disposed at WIPP will reduce, by that same volume, the amount of TRU waste that could be disposed. The net effect would be increased risk to the public and the environment because the TRU wastes having higher concentrations of radionuclides would require continued storage at DOE sites without a disposal path.

Costs could increase for characterization due to the difficulties discriminating between TRU waste and LLW. Lower concentration levels require long activity counting time. This lowers TRU waste characterization and certification throughputs and limits the volumes of available waste for disposal. Added safety costs would be incurred by the system for minimizing worker exposure in handling additional waste to meet the characterization requirements of the WIPP WAC.

Numerous laws, regulations, and Department agreements with States would require revision. Amendments to the LWAA, the Low-Level Radioactive Waste Policy Amendments Act of 1985 (3), and associated implementing regulations in the U.S. Codes of Federal Regulation (CFR) and DOE internal orders would be required (see Section on Impacts to Regulations below). Though the decision could be immediate, the implementation would take years and create confusion.

BACKGROUND

Congressional Interest

Congressional staffs have inquired as to the cost savings that might be realized if mixed LLW having alpha-emitting radionuclides could be disposed at WIPP. Of particular interest, is whether the scope of the Advanced Mixed Waste Treatment Project (AMWTP) could be reduced or eliminated if the waste could be disposed at WIPP without treatment. The AMWTP is specifically designed to treat mixed LLW having alpha-emitting radionuclides and is estimated to have a life cycle cost of \$1 billion.

Transuranic Waste

In 1970, the U.S. Atomic Energy Commission (AEC) issued Immediate Action Directive 0511 (4) requiring the defense complex to segregate wastes with “known or detectable contamination of TRU nuclides” in retrievable storage pending permanent disposal. The 1973 AEC Manual Chapter 0511 (5), which provided guidance for radioactive waste management, defined TRU waste as containing “certain alpha-emitting radionuclides of long half-life and high specific radiotoxicity to greater than 10 nanocuries/gram.” The definition was subject to a list of specific conditions and understandings. The value was derived from the upper range of concentrations of radium-226 in the earth and was subject to modification based on long-term studies of nuclide migration in soil.

An Alpha-Contaminated Waste Management Workshop held in August of 1982 (6) and attended by experts from DOE, EPA, NRC, and the private sector resulted in a recommendation that TRU waste be defined as greater than 100 nCi/g. The recommendation was adopted in DOE Order 5820.1 (1982) (7) and in subsequent revisions to the Order, i.e., 5820.2 (1984) (8) and 5820.2A (1988) (9). The current revision, DOE Order 435.1 (10), does not change the definition. The EPA’s environmental radiation protection standards (11) (40 CFR 191) also adopted the 100 nCi/g definition.

The NRC has implemented regulations in Title 10 CFR Part 61 (13) that are consistent with 100 nCi/g. Based on disposal requirements, NRC categorizes LLW into four classes, Class A, B, C, and waste exceeding the definition of Class C (more commonly known as Greater than Class C) which includes waste having alpha-emitting transuranic nuclides with half-life greater than five years and in concentrations exceeding 100 nCi/g. This waste must be disposed in geologic repositories as defined in Title 10 CFR Part 60, unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are approved by the Commission.

The Waste Isolation Pilot Plant Land Withdrawal Act of 1992 (LWA) (14) and the LWAA defines TRU waste as having more than 100 nCi/g of alpha-emitting transuranic isotopes, with half-lives greater than 20 years, except for “(A) high-level radioactive waste; (B) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations; or (C) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with part 61 of Title 10, Code of Federal Regulations.”

Given current constraints, radioactive waste can only be disposed at WIPP if it satisfies the criteria for TRU waste as defined by the LWAA. The LWAA required the EPA to write implementing regulations that were promulgated in 40 CFR 191 and 194 (15). Under Subpart A of 40 CFR 191, radioactive waste is to be managed as TRU waste if it satisfies the following criteria: “waste containing more than 100 nanocuries of alpha-emitting transuranic radionuclides per gram of waste, with half-lives greater than 20 years.”

The Price-Anderson Amendments Act of 1988 added the following definition for TRU waste to the Atomic Energy Act (AEA) of 1954, as amended (12) and is the only major legislation not in agreement with the recognized definition of TRU waste.

The term "transuranic waste" means material contaminated with elements that have an atomic number greater than 92, including neptunium, plutonium, americium, and curium, and that are in concentrations greater than 10 nanocuries per gram, or in such other concentrations as the Nuclear Regulatory Commission may prescribe to protect the public health and safety.

Attachment A provides additional historical information associated with implementing the definitions for TRU waste.

Commingled LLW and TRU Waste

In 1970, the Atomic Energy Commission (AEC) required the defense complex to segregate wastes with "known or detectable contamination of TRU nuclides" in retrievable storage pending permanent disposal. In 1973, the AEC defined the minimum radioactivity level for TRU waste as greater than 10 nCi/g. The effect of revising the definition for TRU waste from 10 nCi/g to 100 nCi/g (in 1982) was to create an inventory of radioactive waste consisting of non-mixed LLW, mixed LLW, and TRU waste stored in the same locations, having different disposal criteria, and no "inexpensive" way to differentiate the individual waste containers. Since 1982, this waste has been managed as though the entire inventory meets the definition of TRU waste, knowing that a portion is mixed and non-mixed LLW, all having alpha-emitting radionuclides. The estimated volume of this inventory is summarized in Table I and is based on DOE 1995 mixed waste inventory data ¹⁶ developed during the preparation of Site Treatment Plans required by the Federal Facility Compliance Act of 1992 ¹⁷ (FFCAct). Buried TRU waste that may be retrieved by ER and waste from future D&D activities were not included in the report. The quantity of waste managed as TRU which will assay at less than 100 nCi/g is not well known.

Some of the radioactive waste in the commingled TRU waste and LLW inventory is thought to contain listed or characteristically hazardous contaminants as defined by implementing regulations in 40 CFR 260 through 272. The combination of radionuclides and RCRA listed or characteristic contaminants, "mixed waste", creates a unique waste management concern for the DOE. In 1992, RCRA was amended by the FFCAct. The amendment gave DOE and the Department of Defense three years to identify treatment technologies and safe storage for mixed waste. These treatment technologies and associated implementing plans are established in Site Treatment Plans prepared by all sites managing mixed waste.

The best demonstrated available technologies (BDAT) for treatment of mixed LLW are established on a waste-stream-by-waste-stream basis, and based on the RCRA hazard category. Currently, mixed LLW having alpha-emitting radionuclides have limited treatment and disposal options and must meet the LDR in 40 CFR 268. RCRA listed waste must be disposed at a RCRA permitted facility. Non-mixed LLW does not require treatment to RCRA LDR and can be

disposed at one of the DOE LLW disposal sites or at a commercial (licensed) non-mixed waste disposal facility.

The LWAA excludes waste designated for disposal at WIPP from the RCRA LDR. As such, TRU waste designated for disposal at WIPP is not subject to the provisions of 40 CFR 268 for LDR. However, 40 CFR Parts 264 and 270 require a RCRA storage permit unless an extension to the 90-day rule is granted. Many of the DOE TRU waste storage sites have received such extensions as part of agreements with the EPA and the regulating state.

Table I Mixed LLW Volumes having Alpha Emitting Radionuclides between 10 Ci/g and 100 nCi/g

Site	Contact Handled TRU Waste Volume (m ³)		Estimated Mixed LLW having Alpha Emitting Radionuclides (m ³)	
	FY 1998 Stored (1)	Projected through FY 2033 (2)	FY 1995 Stored	Additional Projected through FY 2001
Argonne National Laboratory-East	94	109	0	0
Hanford Reservation	16,127	7,305	5	0
Idaho National Engineering and Environmental Laboratory	64,575	15,009	26,653 (4)	0
Lawrence Livermore National Laboratory	297	835	448	1,760
Los Alamos National Laboratory	8,255	8,544	26	1
Mound Plant	241	6	97	4
Nevada Test Site	618	19	261	0
Oak Ridge National Laboratory	917	180	0	0
Rocky Flats Environmental Technology Site	1,505	6,988	6,764	4,005
Savannah River Site	11,725	17,811	3,060	0
Small Quantity Sites	46	167	unknown	unknown
Total Waste Volumes ... (3)	104,400	56,973	37,314	5,770

(1) Volumes prior to treatment and repackaging from National TRU Waste Management Plan (18)

(2) Projected volumes include estimates from ER, D&D, and future Department missions; e.g., disposition of weapons useable plutonium at the Savannah River Site. Estimates will change based on future compliance actions under environmental law.

(3) Totals reflect rounding of numbers.

(4) Included in 64,575 m³ as waste to be treated to TRU and disposed at WIPP.

PROBABLE IMPACTS IF CONTEMPLATED CHANGE IS IMPLEMENTED

Impact to Legal and Regulatory Infrastructure

Modifications to the definitions of TRU waste would require amendments to the LWAA and would create inconsistencies with the Low-Level Radioactive Waste Policy Amendments Act of

1985, and all of the associated implementing regulations, agreements, and internal orders. These laws, implementing regulations, and internal orders are consistent regarding the transuranic radioactivity concentration level defining LLW and TRU waste. The cost to DOE and other government agencies, as well as costs to the private sector, of changing the definition cannot be easily estimated. Modifications could be required for the LLW Compact State agreements and Federal Facilities Compliance Agreements. Renegotiations would be required for some of the FFCAct Consent Agreements and Orders as well as redrafting of Site Treatment Plans to revise the Background Volume (BV) and Plan Volume (PV) at those sites having LLW and mixed LLW containing alpha-emitting radionuclides in concentrations between 10 and 100 nCi/g.

Impact to Storage and Treatment Operations

Much of the commingled TRU waste and LLW is stored in trenches or subsurface storage pads. Preparing the waste for disposal requires retrieving waste from these storage areas and performing radioassay to segregate TRU waste, non-mixed LLW, and mixed LLW. Non-mixed LLW can be disposed on-site or at an off-site DOE or commercial LLW disposal site if it meets the site waste acceptance criteria. Mixed LLW must be treated to LDR for surface disposal in a LLW disposal facility if a treated RCRA characteristic waste or in a RCRA permitted disposal facility if a treated RCRA listed waste. Alternatively, the mixed LLW having alpha-emitting radionuclides may be blended or concentrated by treatment to produce TRU waste for disposal at WIPP, as is being considered at the AMWTP. If the activity threshold definition of TRU waste is lowered to 10 nCi/g, the mixed and non-mixed LLW having alpha-emitting radionuclides in concentrations between 10 and 100 nCi/g would require disposal at WIPP.

Of great concern, is the potential impact from increased quantities of TRU waste generated from ER and D&D activities that would result from lowering the threshold value. For example, the DOE Operations Office at the Rocky Flats Environmental Technology Site, roughly estimates 50,000 m³ of LLW having alpha-emitting radionuclides will be generated from D&D. Also, the DOE Operations Office at the Oak Ridge Reservation (ORR) is planning for the surface disposal of LLW having alpha-emitting radionuclides from ER activities. Other sites, having facilities that processed plutonium, such as the Savannah River Site, Los Alamos National Laboratory, INEEL, Hanford, and ORR, can expect D&D activities to generate significant quantities of LLW having alpha-emitting radionuclides. These quantities of LLW, particularly the non-mixed LLW, are expected to exceed the legal capacity of WIPP and to increase cost to the National Waste Management Program because of the need to characterize radioactive waste below 100 nCi/g.

Most DOE sites storing TRU waste can be expected to identify mixed LLW during the TRU waste characterization process. Changing the activity concentration threshold would allow this waste, if it meets the WIPP WAC, to be shipped to WIPP for disposal, thus removing the need for treatment to LDR which is required for surface disposal. There may be advantages to disposing of mixed LLW having alpha-emitting radionuclides at WIPP; however, the cost of preparation and geologic disposal at WIPP is not inconsequential. The alternatives of surface and deep geologic disposal must be assessed.

For non-mixed LLW waste, the impact to sites of changing the TRU waste definition threshold from 100 to 10 nCi/g would be to increase cost. Non-mixed LLW having alpha-emitting radionuclides does not require treatment to LDR and can be disposed at DOE LLW facilities. Disposal at WIPP would increase characterization, transportation, and disposal cost.

Hanford and INEEL are the only sites with planned capability to treat mixed LLW having alpha-emitting radionuclides. At the Hanford Site, the FFCAct Consent Order has milestones to initiate retrieval of buried TRU waste. Hanford plans to assay all waste buried in trenches in place, retrieve only the TRU waste, and send it to the Waste Receiving and Processing Facility (WRAP). The LLW will be left as disposed. If the activity threshold limit is lowered, the waste between 10 and 100 nCi/g would also have to be retrieved at additional cost to the program, higher radiation dose to the workers, and additional risks from transportation to WIPP. Also, Hanford has contracted for the treatment of mixed LLW having alpha radionuclides and will dispose of this waste on-site in a RCRA permitted facility. Changing the activity threshold definition of TRU waste may require contract modifications and is expected to result in additional cost to transport and dispose at WIPP.

The potential for cost savings with the INEEL AMWTP initiated the interest in changing the definition of TRU waste. INEEL has approximately 65,000 m³ of legacy TRU waste, of which an estimated 27,000 m³ is mixed LLW having alpha-emitting radionuclides (Table I). By 2002, 3100 m³ of TRU waste in 55 gallon drums are required to be sent off-site to comply with a Settlement Agreement signed by the State of Idaho, DOE, and the Department of Defense. The remainder of the TRU waste and mixed LLW having alpha-emitting radionuclides is to be processed together in the AMWTP (scheduled to be operational in 2003) which is designed to produce a TRU waste end product for disposal at WIPP. Lowering the activity threshold for TRU waste would allow some mixed LLW to be sent to WIPP without treatment. However, the INEEL wastes consist of sludges, high heat and plutonium content, non-conforming packages, PCBs, ignitables, and other wastes not in compliance with the WIPP WAC. Changing the activity concentration level that defines TRU waste would not eliminate the need for treatment of these wastes. The AMWTP processing will treat or blend mixed LLW having alpha-emitting radionuclides together with a high concentration TRU waste to produce a TRU waste end product that meets LDR and WIPP WAC. Lowering the activity concentration level definition for TRU waste is not required for this waste to be disposed at WIPP and would not eliminate the cost for some waste treatment. An Environmental Impact Statement (EIS) for the DOE AMWTP is being prepared which will further examine non-thermal treatment alternatives for TRU and mixed LLW having alpha-emitting radionuclides.

Impact to Disposal Operations

The disposal capacity of WIPP is limited by the LWAA to 175,600 m³. The DOE Carlsbad Area Office (CAO) National TRU Waste Management Plan (NTWMP) estimated the existing (legacy) quantity of TRU waste to be shipped to WIPP at 106,000 m³ and new generation waste (including remote-handled TRU waste, ER waste, and D&D waste) at 59,000 m³, for a total of 165,000 m³. These volumes could change as waste is repackaged to higher volumes or treated by volume reduction. Redefining TRU waste would cause approximately 16,000 m³ of the mixed

LLW (Table I) and an anticipated greater volume of waste from ER and D&D activities to qualify for disposal at WIPP. If the activity threshold for TRU waste is lowered, it is expected that the present volume capacity would be exceeded. This would result in some TRU waste (>100 nCi/g) not being able to be disposed at WIPP without a change to the LWAA capacity, thus resulting in higher storage cost and population risk.

Operational costs at WIPP are independent of the types of waste disposed. However, the cost of replacing lost capacity can be significant if a new disposal site is required, or even if WIPP is expanded or the design life is extended.

Impact to Characterization Operations

If the activity limit between LLW, mixed LLW, and TRU waste is lowered, radioassay for the alpha-emitting radionuclide will be a significant technical challenge. Current technology cannot practically and reliably detect alpha-emitting radionuclides below about 60 nCi/g on a production basis. Quantifying contamination at 100 nCi/g is difficult. More expensive characterization would be required and the inability to discriminate at the lower limit, 10 nCi/g, would likely result in more LLW being characterized as TRU waste. Issues would also be raised as to whether LLW and mixed LLW are TRU waste that should be disposed at WIPP.

Impact to Transportation Operations

Waste shipped to WIPP for disposal is required by the LWAA to be transported in NRC-certified, Type B containers. Presently, only the Transuranic Package Transporter (TRUPACT-II) is the only approved shipping container for waste shipment to WIPP, although smaller load HalfPacks, and 72B-casks for remote-handled waste are expected to be approved for future use. Transportation to WIPP also includes establishment of transportation corridors and tracking of shipments. LLW and mixed LLW having alpha-emitting radionuclides can be transported between sites, excluding WIPP, for treatment or surface disposal in approved DOE or Department of Transportation containers. Because of the potential plutonium content in LLW and mixed LLW, some of this material will require shipment in Type B containers. A limited number of single containment Type B containers are available. Transporting waste to WIPP in TRUPACT-IIs would be somewhat more expensive than transporting to surface treatment facilities and subsequent LLW disposal sites. The primary impact would be at Hanford, where planning is underway for treatment and possible on-site disposal of LLW having alpha-emitting radionuclides, and at INEEL, where plans are to treat mixed LLW having alpha-emitting radionuclides to make TRU waste and reduce the volume by 65%.

Impact to Health and Safety and the Environment

The effect of potential changes to the definition of TRU waste would be increased risk to the worker, public health and safety, and the environment. Because of higher concentrations and longer-lived radionuclides, TRU waste is recognized as posing a greater risk to human health and the environment than LLW. All wastes going to WIPP are subject to more stringent waste certification requirements than LLW and mixed-LLW for disposal. These requirements mandate more extensive sampling and characterization processes with potential increases to worker

exposure. The increased risks to worker health and safety would be caused by the additional retrieval and characterization activities required to prepare the newly defined TRU waste for disposal to WIPP criteria. If mixed-LLW having alpha emitting radionuclides did not meet the LDR, and treatment was required before disposal, the treatment process may be comparable in its risk to worker health and safety to sampling and characterizing TRU waste. If this were the case, a redefinition of mixed-LLW having alpha emitting radionuclides greater than 10 nCi/g to TRU waste may be economical. A cost benefit analysis should be considered prior to a decision.

The suggested change would result in placing a significant volume of LLW in geologic disposal even though shallow land burial is acceptable and safe. If LLW and mixed LLW are shipped to WIPP, the legislated disposal capacity is expected to be exceeded with currently stored and future generated wastes. Any displaced TRU waste volume would be accessible to the environment longer, and potentially exposing surrounding populations to greater risks.

ATTACHMENT A - HISTORY ASSOCIATED WITH IMPLEMENTING THE DEFINITIONS

- Beginning in 1970, radioactive waste having transuranic materials greater than 10 nCi/g was placed in retrievable storage pending permanent disposal, as directed by the Immediate Action Directive 0511 issued by the Atomic Energy Commission (AEC).
- In 1973, the AEC Manual Chapter 0511 provided guidance for managing radioactive waste, defined TRU waste as greater than 10 nCi/g. The West Valley Demonstration Project Act also used greater than 10 nCi/g to define TRU waste in 1980.
- Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (PL 96-164) - Authorizes the Waste Isolation Pilot Plant construction project in the Delaware Basin of New Mexico as a defense activity of the DOE. It states that this project is for the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from defense activities.
- The Low-Level Radioactive Waste Policy Act of 1980 declares it to be the policy of the Federal Government that each state is responsible for providing for the availability of capacity either within or outside the state for the disposal of LLW generated within its borders. It authorizes states to enter into compacts providing for the establishment and operation of regional LLW disposal facilities. It directs the Secretary of Energy (the Secretary), to assist the states in the above policy, to prepare and submit to Congress and to each state a report which: (1) defines the needed present and future LLW capacity; (2) defines the status of all commercial LLW disposal sites; (3) evaluates the transportation requirements for the shipment of wastes; and (4) evaluates disposal facilities owned and operated by the DOE.
- In 1982, a group of experts from DOE, EPA, NRC, and the private sector worked together to define radioactive wastes and redefine TRU waste based on radiological hazards to the environment, public, and the worker. The group proposed raising the lower limit for radioactivity in TRU waste to greater than 100 nCi/g.

- DOE published DOE Order 5820.2, Radioactive Waste Management on February 6, 1984 and modified by DOE Order 5820.2A on September 26, 1988. DOE Order 5820.2A is still in effect and is expected to be replaced by DOE Order 435.1. The new release date for 435.1 is eminent but will not change the definition of TRU waste. The following is an excerpt from Chapter II, section 3.a(1) - (3) of DOE Order 5820.2A.
 - Any material that is known to be, or suspected of being contaminated with transuranium radionuclides shall be evaluated as soon as possible in the generating process, and determined to be either recoverable material, transuranic waste, low-level waste, mixed waste, or non-radioactive trash in order to avoid commingling the various material streams.
 - The lower concentration limit for transuranic waste (100 nCi/g of waste) shall apply to the contents of any single waste package at the time of assay. The mass of the waste container including shielding shall not be used in calculating the specific activity of the waste.
 - Radioactive wastes with quantities of transuranic radionuclides in concentrations of 100 nCi/g of waste or less shall be considered to be low-level waste, and shall be managed according to the requirements of Chapter III of this Order.
- The Low-Level Radioactive Waste Policy Amendments Act of 1985 amends the Low-Level Radioactive Waste Policy Act to confer responsibility for the disposal of specified LLW on each state (either alone or in cooperation with other states). The amendments require:
 - The Secretary to submit a comprehensive report to the Congress within a specified time setting forth recommendations for ensuring the safe disposal of all radioactive waste designated as a Federal responsibility.
 - Authorizes states to enter into regional compacts to establish and operate LLW disposal facilities. Declares such compacts inapplicable to the management, transportation, or disposal of LLW owned or generated: (1) by the DOE; (2) as a result of atomic weapons research and development activities; or (3) by the Department of the Navy as a result of the decommissioning of naval vessels.
 - Provides that federally generated waste which is disposed at non-Federal facilities shall be subject to the same conditions as any such waste which is not generated by Federal activities. States that any LLW disposal facility operated exclusively for such federally-generated waste is not subject to any compact action.
 - Limits the availability of disposal capacity during a seven-year transition period provided by the sites located in: Barnwell, South Carolina; Richland, Washington; and Beatty, Nevada.
 - Prescribes guidelines for the allocation of disposal capacity among specified commercial nuclear power reactors during a specified four-year transition period and three-year licensing period.
 - Authorizes the states of South Carolina, Washington, and Nevada to deny disposal capacity access to any generator or intermediate handler who fails to provide

authorized information necessary to monitor disposal capacity availability, allocations, and surcharges.

- Requires the Secretary to: (1) furnish technical and financial assistance to compact regions and to states seeking assistance under this Act; and (2) submit an annual report to the Congress summarizing the status and requirements of LLW disposal activity.
- Directs the Commission within a specified time period to: (1) Publish the technical information and guidance needed by states and compact regions to establish LLW disposal facilities that use alternatives to shallow land burial and that meet the Commission's licensing requirements; (2) expedite the licensing review procedures, and expertise to exempt from Commission regulation waste streams whose radioactive waste is below regulatory concern.
- EPA published Title 40 Code of Federal Regulation Part 191 in 1985 and used the definition of TRU waste as 100 nCi/g of waste. Subparts B and C were remanded in 1987, but re-promulgated in 1993.
- NRC published Title 10 Code of Federal Regulation Part 61 in 1986 which was required by the Low-Level Radioactive Waste Policy Amendments Act of 1985. NRC used alpha emitting radionuclides, concentrations greater than 100 nCi/g, half-lives greater than five years in the Rule.
- Price-Anderson Amendments Act of 1988 (PL-100-408) - Adds the definition of TRU waste to the Atomic Energy Act of 1954, as amended; minimum threshold concentration of transuranics is "greater than 10 nCi/g or in such other concentrations as the Nuclear Regulatory Commission may prescribe to protect the public health and safety".
- Waste Isolation Pilot Plant Land Withdrawal Act of 1992 (PL 102-579) - Withdraws specified lands in the State of New Mexico from all forms of entry, appropriation, and disposal under the public land laws (including mineral and geothermal leasing, material sale, and mining laws). Transfers jurisdiction over the withdrawn lands to the Secretary. Reserves their use by the Secretary for authorized activities associated with WIPP project purposes set forth in the Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980. Revokes specified public land orders made inconsistent by this Act. Uses the currently established definition of 100 nCi/g of alpha-emitting radionuclides.
- EPA re-promulgates Title 40 Code of Federal Regulation Part 191 in 1993.
- EPA publishes Title 40 Code of Federal Regulation Part 194 in 1995.
- Waste Isolation Pilot Plant Land Withdrawal Amendment Act of 1996 - Amends the Waste Isolation Pilot Plant Land Withdrawal Act, of 1992 to remove certain provisions relating to: (1) compliance of specified Federal oil and gas leases with the Solid Waste Disposal Act; (2) test phase; (3) requirements for the commencement of disposal operations; and (4) disposal regulations. Revises parameters for compliance with EPA disposal regulations to require the Secretary to provide to the Congress a schedule for the incremental submission of chapters of the WIPP EPA-compliance application to the EPA Administrator within a prescribed time frame. Repeals the requirement that the Secretary use waste form modifications of engineered and natural barriers to comply with final

disposal regulations at WIPP, but requires use of any other measures necessary, in addition to engineered and natural barriers, to achieve compliance. Exempts transuranic mixed waste designated for disposal at the WIPP project from the LDR in specified Federal regulations. Maintains the current definition of TRU waste at 100 nCi/g of alpha-emitting radionuclides.

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