GREATER-THAN-CLASS C RADIOACTIVE WASTE MANAGEMENT

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Statutory requirements for GTCC LLW disposal were prescribed by the U.S. Congress in 1985

(Low-Level Radioactive Waste Policy Amendments Act of 1985, P.L. 99-240)

- The Federal Government (DOE) shall be responsible for GTCC LLW disposal
- GTCC LLW shall be disposed of in a facility licensed by the Nuclear Regulatory Commission

The National Low-Level Waste Management Program at the Idaho National Engineering Laboratory provides technical and programmatic support for the GTCC LLW Program.

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The DOE's GTCC LLW Management Program has developed technical information and evaluated programmatic options pertinent to strategy development and implementation

- GTCC LLW characterization and projections data
- Alternative disposal options
- Waste treatment methods and facilities
- Waste packaging and transportation methods
- Pre-disposal storage methods and facilities

GTCC LLW is low-level radioactive waste that:

- was generated by licensees of the NRC or Agreement States
- has concentrations of long-lived and/or short-lived radionuclides, based on waste volume or weight, that exceed the limits for Class C LLW that are presented in 10 CFR 61

Examples of GTCC LLW include:

Nuclear Utility

- Activated Metals
  - Core Shroud
  - Upper and Lower Core Support Plates
- Filters

Sealed Sources

- Irradiation Sources
- Instrumentation
- Well Logging

Other Generators

- Users of Carbon-14
- Irradiation Research Labs
- Sealed Source Manufacturers

GTCC LLW characterization and projections data are based on extensive study over the past several years

- Initial GTCC LLW characterization report published in August 1991
- Thorough update and revision published in September 1994 (report number DOE/LLW-114, REV. 1)
- Both reports
  - were based on extensive analytical and survey data
  - utilized input from expert consultants
  - were independently peer reviewed

The base-case GTCC LLW projections, through year 2035, show relatively low total volumes

GTCC LLW Category	Unpackaged Volume, Cubic Meters	Packaged Volume, Cubic Meters	Radionuclide Activity, Millions of Curies
Nuclear Utility Waste	1,140	1,350	88.4
Sealed Sources	1	240	1.6
Other Generator Waste	240	470	0.013
TOTALS (ROUNDED)	1,380	2,060	90

All GTCC LLW is currently stored by the generator.

Technical and economic evaluations by the GTCC LLW Program indicated a need to reassess the program strategy

- Waste characterization studies and volume estimates showed projected GTCC LLW quantities to be low
- Technical and economic evaluations of alternative disposal concepts showed high unit disposal costs for a dedicated GTCC LLW disposal facility
- GTCC LLW storage by DOE would be expensive if new facilities or extensive facility modifications were required

Program Reassessment: Major Conclusions and Recommendations

- Co-dispose utility generated GTCC LLW in a geologic repository
- For non-utility generated GTCC LLW that is not accepted into the repository, co-dispose with DOE Special Case Waste
- Establish a separate program for DOE responses to public health and safety problems with sealed sources at NRC request
- Accept GTCC LLW for pre-disposal storage only from non-utility sources, and only as necessary to mitigate potential public health and safety concerns

Two stakeholder workshops were held to gather input

- Washington, DC and Portland, Oregon
- Attendees represented
  - NRC
  - EPA
  - Utilities
  - DOE
  - Industry consultants
  - State officials
  - Public
  - NWTRB

Stakeholder input included:

- Manage GTCC with SNF for storage and repository disposal
- Waste acceptance criteria should be established soon to aid generators in their planning
- Waste disposal fee should be developed to aid in cost estimating
- Disposal fee should be less than that of SNF on a volume basis

GTCC LLW Program strategy consists of five major elements:

- Pursue co-disposal of GTCC LLW in a geologic repository
- Provide limited DOE storage capability for GTCC LLW
- Assure compatability of waste acceptance criteria with repository packaging and waste form requirements
- Develop fee determination and collection methods
- If a need is identified, pursue co-disposal of GTCC LLW with DOE Special Case Waste

General attributes of the "Special Case Waste" (SCW) category:

- Owned or generated by DOE
- Not well characterized, in many cases
- May not fit current disposal plans for low-level waste, transuranic waste, or high-level waste
- A wide variety of waste forms (some similar to GTCC LLW)

Examples of SCW subcategories most similar to GTCC LLW are:

- Special Performance Assessment Required (SPAR)
  - Exceeds the NRC's limits for Class C LLW
  - Not generally acceptable for near-surface disposal
  - Current INEL inventory is about 87 cubic meters
  - Examples are test reactor hardware and skeletons from spent fuel consolidation R&D

Examples of SCW subcategories most similar to GTCC LLW are: (cont.)

- Non-Defense TRU
  - Exceeds 100 nCi/g TRU
  - Does not satisfy current waste acceptance criteria for Waste Isolation Pilot Plant (WIPP) - WIPP accepts only defense waste
  - Current INEL inventory is about 30 cubic meters
  - Examples are transuranic materials received from the private sector for R&D or public health and safety reasons

Options for future SCW treatment and disposal are as follows:

- After further characterization and treatment, some SCW may become suitable for near-surface disposal
- SCW that is highly activated or contains long-lived radionuclides may be suitable for repository disposal
- Some type of intermediate-depth disposal capability for SCW may be developed by DOE