



# Texas Department of State Health Services Radiation Safety Licensing Branch

## REGULATORY GUIDE 6.9

### GUIDE FOR THE PREPARATION OF REQUEST FOR EXTENDED INTERIM STORAGE OF LOW-LEVEL RADIOACTIVE WASTE

#### I. Introduction

This guide describes the type of information that the Department of State Health Services (DSHS or Agency) staff needs to evaluate a request for extended interim storage of low-level radioactive waste (LLRW). Should a LLRW disposal site become available in Texas, the licensee must amend their license to reflect that interim storage is no longer necessary.

The following outline was developed to assist the licensee in preparing a request, if needed, to authorize extended interim storage of LLRW. The term "extended interim storage" means storage of LLRW above the activity authorized on an existing specific license and/or at a location different than that specified on an existing specific license. Any activities (i.e., compaction, processing, or treating) associated with the handling and storage of LLRW must be specifically authorized by the license. An amendment to the license will be necessary in order for the licensee to conduct these activities if the activities are not currently authorized. Title 25 Texas Administrative Code (TAC) Section (§) 289.254 "Licensing of Radioactive Waste Processing and Storage Facilities," prohibits possessing, storing, or processing radioactive waste from another person except as authorized in a specific license issued pursuant to 25 TAC §289.254.

#### II. Identification of Waste

In order to determine if an amendment to the license is needed to store LLRW, the licensee should complete the following to identify the LLRW that will be generated by radionuclide and activity; estimate the volume of LLRW that will be generated and must be managed by extended interim storage; and evaluate current storage authorization limitations for adequacy to manage the volume of LLRW estimated to require storage during the interim period.

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Although it is presently not known when a LLRW disposal site in Texas will be available, a licensee should evaluate its storage requirements for a period of five years. Estimates of LLRW generation should be based on the licensee's previous five years of generation of LLRW and realistic projections for the next five years.

- A. For the current year and each of the previous four years, identify the total amount of LLRW generated by radionuclide and activity authorizations on the licenses and in terms of the following parameters and categorize it as to whether it is stored, transferred for disposal, disposed of via a specific provision of the TRCR, or held for decay.

<u>Parameters</u>	<u>Total</u>	<u>Stored</u>	<u>Transferred</u>	<u>Disposed or Transferred for Disposal</u>	<u>Decayed</u>
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1. Activity  
(curies)
2. Weight  
(pounds)
3. Volume  
(cubic feet)

- B. Using the data (for the current year and the four previous years) and the format from II.A., project the generation of the types of LLRW identified in II.A. for each year of the next five years. If there are any situations (new projects, conclusion of old projects, anticipated expansion, process changes that result in less generation of LLRW, etc.) that may impact or alter the above projected estimates, they should be specified and may be factored into the projections. Since transfer for disposal may no longer be an option, the component of LLRW previously assigned to that category should now be allocated to the "Stored," "Disposed," and/or "Decayed" categories.

- C. Determine from your license the current authorization limits (both activity and location) for the types of LLRW that will need to be stored.

- D. Sum the projections from II.B. for the categories "Stored" and "Decayed." Compare these sums with authorization limits determined in II.C. and determine the possession limit increases (both activity and location) needed for extended interim storage of LLRW.

- E. Characterize the LLRW to be stored by:

1. Volume of waste by class (as defined in 25 TAC §289.202)

## 2. Physical form of waste

- a. solid - explain if finely divided and capable of re-suspension as an aerosol if disturbed.
- b. liquid - explain volatility (e.g., Aqueous iodine is hazardous if not contained.)
- c. gas - explain construction of containers (e.g., H-3 can leak through many container materials.)

## 3. Additional hazardous non-radiological properties of LLRW (e.g., biological, pathogenic, corrosive, flammable, other.) p62

- F. Identify any additional permits (e.g., Texas Commission on Environmental Quality, Environmental Protection Agency) necessary for storage. The need for additional permits should be clearly identified by the licensee and referenced in the amendment request, as appropriate.

### III. Disposal Plans

This section can only be completely addressed when the date the Texas LLRW disposal site will become operational is known. However, the licensee should at least consider the following:

- A. Specify when current disposal options (e.g., shipment for permanent disposal, transfer to waste broker, etc.) will no longer be used by licensee and/or current storage capacity will no longer be available, and when on-site extended interim storage will begin.
- B. After five years from the date of authorization for extended interim storage, submit a plan for evaluation of interim storage or permanent disposal options.

### IV. Physical Description of Storage Area

- A. Identify the location of the LLRW storage area.
  1. Provide a map identifying the location of the proposed site and any landmarks (e.g., highway intersections, distances from community, etc.) used to identify the location of the site.
  2. Provide a description of the location (plot drawings). The description of the site should provide the dimensions of the property and accurately depict the location of the facility structure(s). The description of the site should also indicate the nature of the adjacent properties (e.g., vacant land, businesses, residences, etc.) and the distance of the proposed facility structure(s) to the property line and adjacent businesses or residences. The site description should also indicate the

location of and distance from creeks, culverts, and drainages.

- B. Specify the type of facility or building in which the LLRW will be stored. This should include a description and accurate drawings of the proposed location. The facility description and drawings should provide the dimensions of the proposed facility structure(s) and a detailed floor plan. Identify on the floor plan intended uses of areas adjacent to areas where LLRW will be located. The descriptions of the location should accurately identify and describe the LLRW handling, processing, and storage areas. These descriptions should provide the dimensions of the facility, including construction and foundation details; details (include drawings) and specifications for the ventilation, plumbing, and suppression systems; and physical security systems to prevent unauthorized entry into the storage area. The construction details should also identify and describe the shielding used (if any is required) in various areas where radioactive waste is received, stored, and processed (provide calculations, including all assumptions, used to determine adequacy of shielding.)

The applicant should indicate if the facility is in a 100-year floodplain and describe how the engineering design of the facility will serve to minimize and control potential LLRW migration into surface waters and ground waters through direct runoff or uncontrolled releases to flood control systems or sanitary sewers, soils, and the atmosphere.

- C. Specify the maximum volume of LLRW that can be stored in the proposed waste storage area, taking into account accessibility to waste, aisles, and walkways. Compare that to the estimate of the total LLRW to be generated as determined in II.B.
- D. Describe how the storage facility will mitigate the effects of temperature and humidity on the LLRW and the containers.
- E. Describe any other hazards that are a present or potential threat.

#### V. Packaging and Container Integrity

- A. Describe the containers used to store LLRW and provide the following information on each type of container:
1. Provide the specifications for each type of container (i.e., size, corrosion resistance, type of coating if metal, type of closure, seals, liners, etc.)
  2. Identify and describe the effects of the components (both radioactive and chemical) of the LLRW and the LLRW's decay products on the containers. For example, if the LLRW contains, or its decay products will result in, acidic or caustic components, describe the effects of these products on the storage containers. Also, if the waste and/or its decay products will result in the

generation of gases, identify the gases expected to be produced and describe their effects on the storage containers and the proposed method for management of the gaseous products.

3. Identify and describe the effects of temperature and humidity on the storage containers.
  4. Describe the labeling to be used on containers of LLRW. Depending on the size of the operation, labeling may be expected to include identification of contents by radionuclide, date of closure, etc.
- B. Describe the procedures to ensure that the containers are of the type specified in V.A.1. and are labeled according to the description in V.A.4.
- C. Describe the program for periodic waste storage inspections and inventories. This program should include surveys, wipes of drums and storage areas, inventories, and general review of safety protocol.
- D. Describe the procedures and equipment for handling, repairing, or repackaging containers of LLRW.

## VI. Radiation Protection

In addition to the licensee's standard operating and emergency procedures, the following may be used as a checklist of the areas that should, as a minimum, be part of the licensee's procedures for waste storage.

### A. Administrative Procedures

#### 1. Internal Inspections

Describe the inspections performed by the licensee to ensure that operating and emergency procedures are being conducted according to the stated procedures.

#### 2. Internal Audits

Describe the audits made of records to ensure that the required information is being recorded and maintained in accordance with the licensee's procedures and the requirements of the regulatory authorities, and that the radiation safety program is operating properly (e.g., review of personnel records to determine that appropriate persons are included in the personnel monitoring program and that exposures are within acceptable levels; reviews of survey and wipe records, air monitoring data, etc.)

### 3. ALARA Program

The applicant/licensee should describe its policy with respect to maintaining exposures as low as reasonably achievable. This should also include a description of the measures taken to achieve this goal.

### 4. Postings and Notifications

Provide the guidelines for restricting access to areas where LLRW is used or stored and for posting warning signs.

### 5. Accountability

Describe the procedures for maintaining an inventory of the LLRW and accounting for the material during receipt, handling, storage, and transfer. Provide a copy of the forms to be used and instructions to personnel responsible for accounting for the LLRW.

### 6. Records Management

Specify who is responsible for records management and where the records will be kept.

## B. Radiation Protection Program

### 1. Effluent Control Techniques

Describe procedures employed to meet the requirements for concentrations of radioactive material in effluents released to water and air as specified in 25 TAC §289.202.

### 2. Contamination Control

Describe the procedures employed to prevent or reduce the probability of contamination of equipment, areas, and personnel, or the release of material to un-restricted areas. These may be described separately as preventive and remedial measures.

#### a. Preventive Measures and Equipment

Describe the contamination control procedures for personnel and equipment. This description should specify the procedures employed for each function involving handling of LLRW, including surveys of material on receipt, repackaging, and prior to transport; safety precautions to be employed when handling LLRW; types of safety equipment to be employed for specific procedures (e.g., protective clothing such as gloves, anti-contamination suits

or respiratory protection devices, etc.); training provided to employees to prevent ingestion and inhalation of radioactive material; and methods to keep radiation exposures as low as reasonably achievable.

#### b. Remedial Measures

Describe the spill, detection, and cleanup plans for the facility and for associated transportation, if applicable. These plans should also describe the procedures for managing spills, contamination, and radiation accidents.

#### 3. Exposure Monitoring

Provide the procedures for monitoring personnel exposure. As a minimum, describe the type of personnel monitoring device(s) used, the exchange frequency, when and how worn, and where the devices are kept when not being worn.

#### 4. Surveys

Describe the radiation surveys, including wipes, that will be performed, specifying the areas and personnel surveyed, frequency of surveys that will be performed, who will perform the surveys, the types of instruments used, and action levels. Include in this description the details for recording the results of the survey, where the records will be maintained, and procedures to be followed when action levels are exceeded.

#### 5. Emergency Procedures

Describe the emergency procedures pertaining to transportation accidents, spills, loss of power, ventilation system failure, fire, etc. Describe the procedures to be followed in each event, including individuals to be notified and appropriate telephone numbers, action to be taken to identify areas of contamination and restrict access to the area, etc.

#### C. Instrumentation and Quality Assurance

1. Describe the type of survey instrumentation, make, model number, frequency of calibration, provider of calibration service, and documentation of calibration.
2. Describe the equipment used to count the wipes, the method for calibrating the counting instrument, and documentation of the calibration procedure.
3. Describe the air sampling equipment used, frequency of calibration, calibration methodology, and documentation of calibration.

#### D. Operating Procedures

The applicant/licensee should provide procedures describing the following aspects

of their LLRW operations; handling, storage, segregation, identification, inspection, transfer, and transportation (e.g., securing containers, shipping papers, etc.). These procedures should include a flow diagram of the LLRW processing/storage operations, a description and accurate drawings of processing equipment (including any LLRW compactors), a description of any special handling techniques used, and a description of the facilities and equipment for repackaging leaking and/or damaged containers.

## VII. Training

Provide a description of the training of personnel who have access to the LLRW storage areas and will be involved in the handling of LLRW.