# COMMISSION BRIEFING SLIDES/EXHIBITS

# BRIEFING ON LOW LEVEL RADIOACTIVE WASTE

## APRIL 17, 2009

U.S.NRC

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

# Briefing on Low-Level Waste Program

## April 17, 2009


## Larry W. Camper, Director

## Division of Waste Management and Environmental Protection/FSME

# Panel 1: Presenters & Topics

- Larry Camper: Overview
- Jim Kennedy: Status of LLW Activities
- Steve Garry: Management of LLW at Operating Power Plants
- John Buckley: Reactor Decommissioning
- Dan Collins: Regional Perspective on Low-Level Waste and Sealed Sources
- Mike Ryan: Risk-informing LLW Management

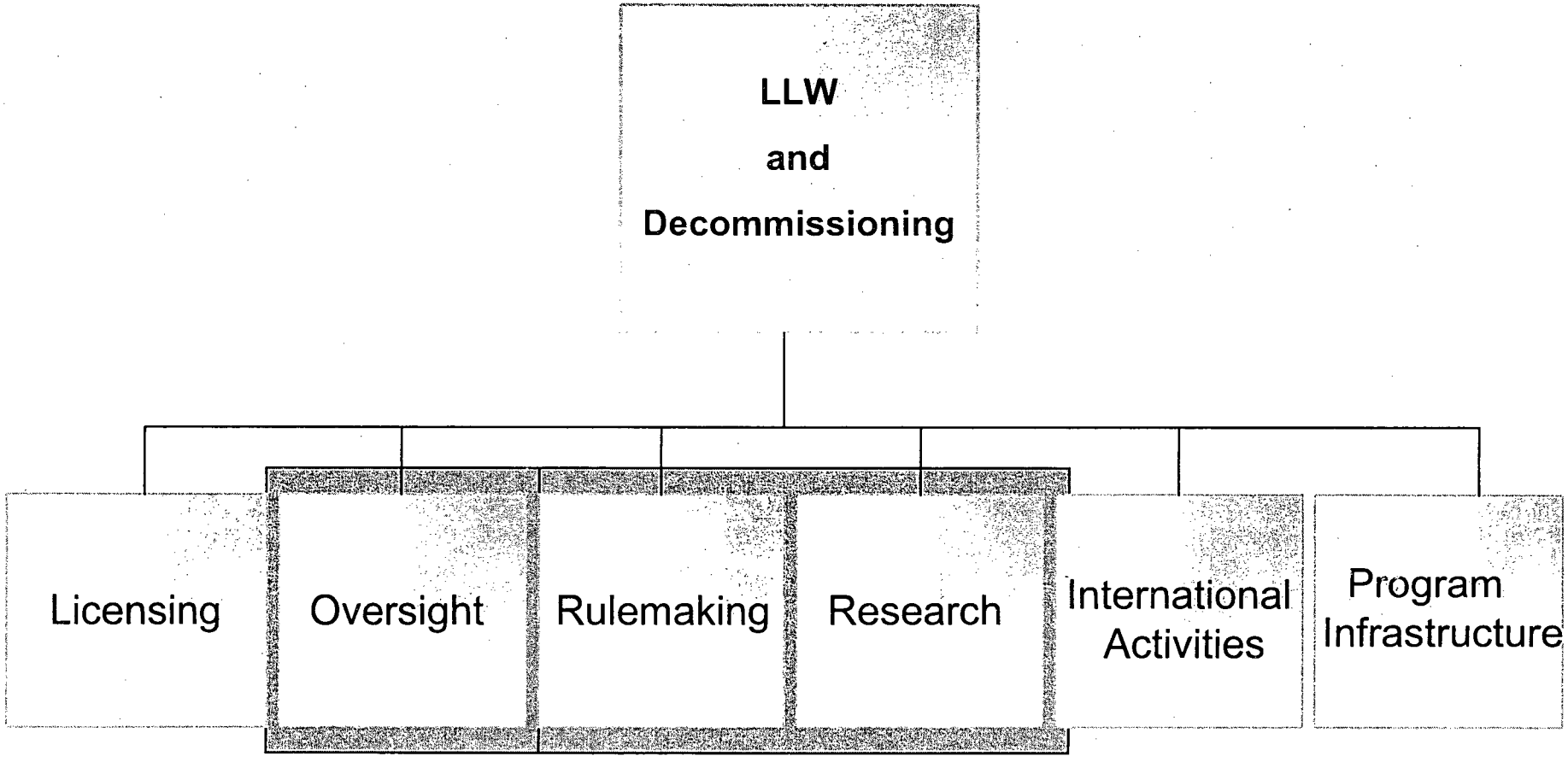
# Panel 2: Presenters & Topics

- Frank Marcinowski, DOE: National Program for DOE GTCC LLW
- Abigail Cuthbertson, NNSA: Sealed source recovery program

# Overview of NRC's LLW Program

- Key Messages
- Major Accomplishments
- LLW Strategic Assessment Rationale
- Stakeholder Outreach
- Conclusions

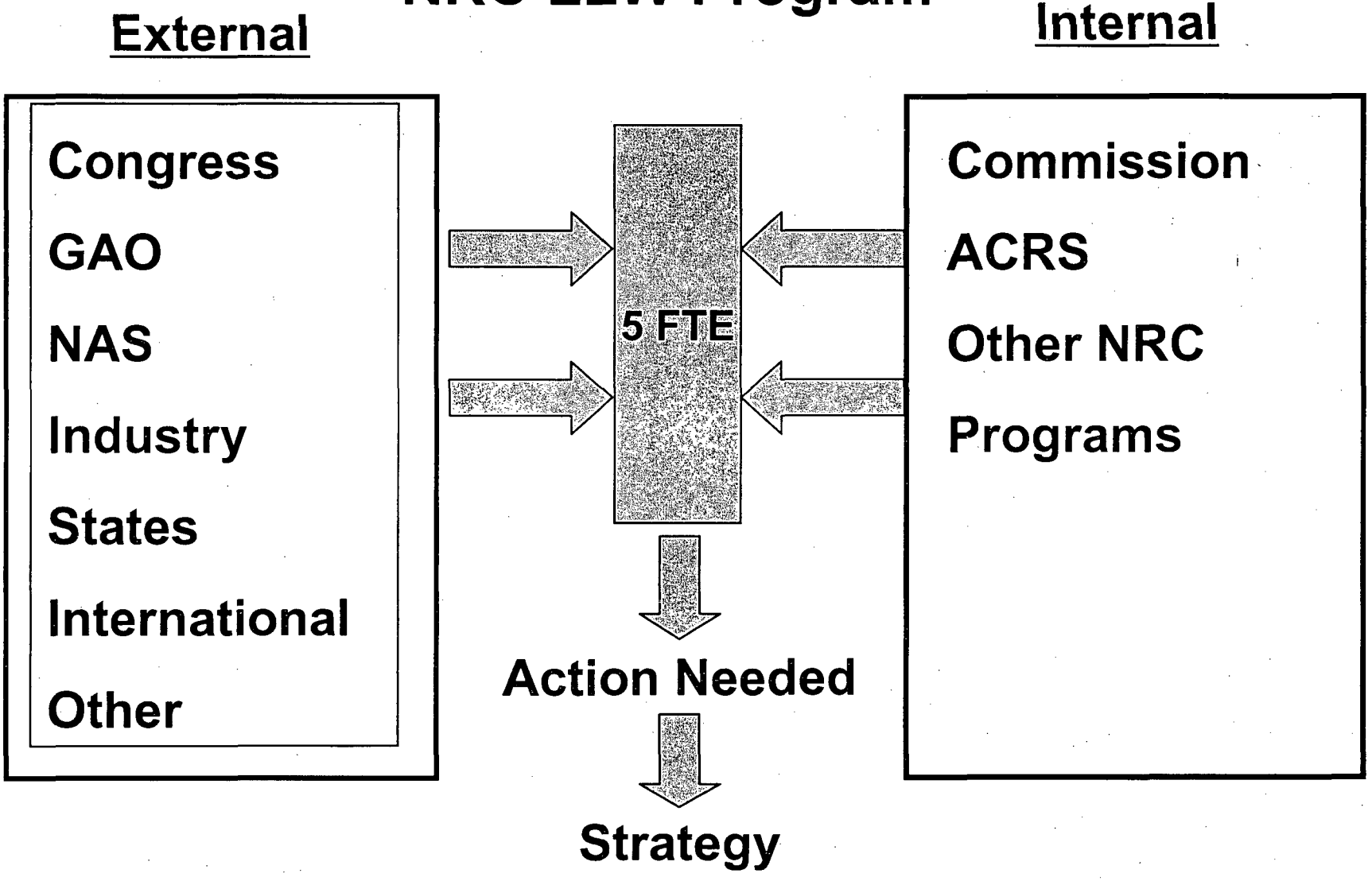
# Business & Product Lines



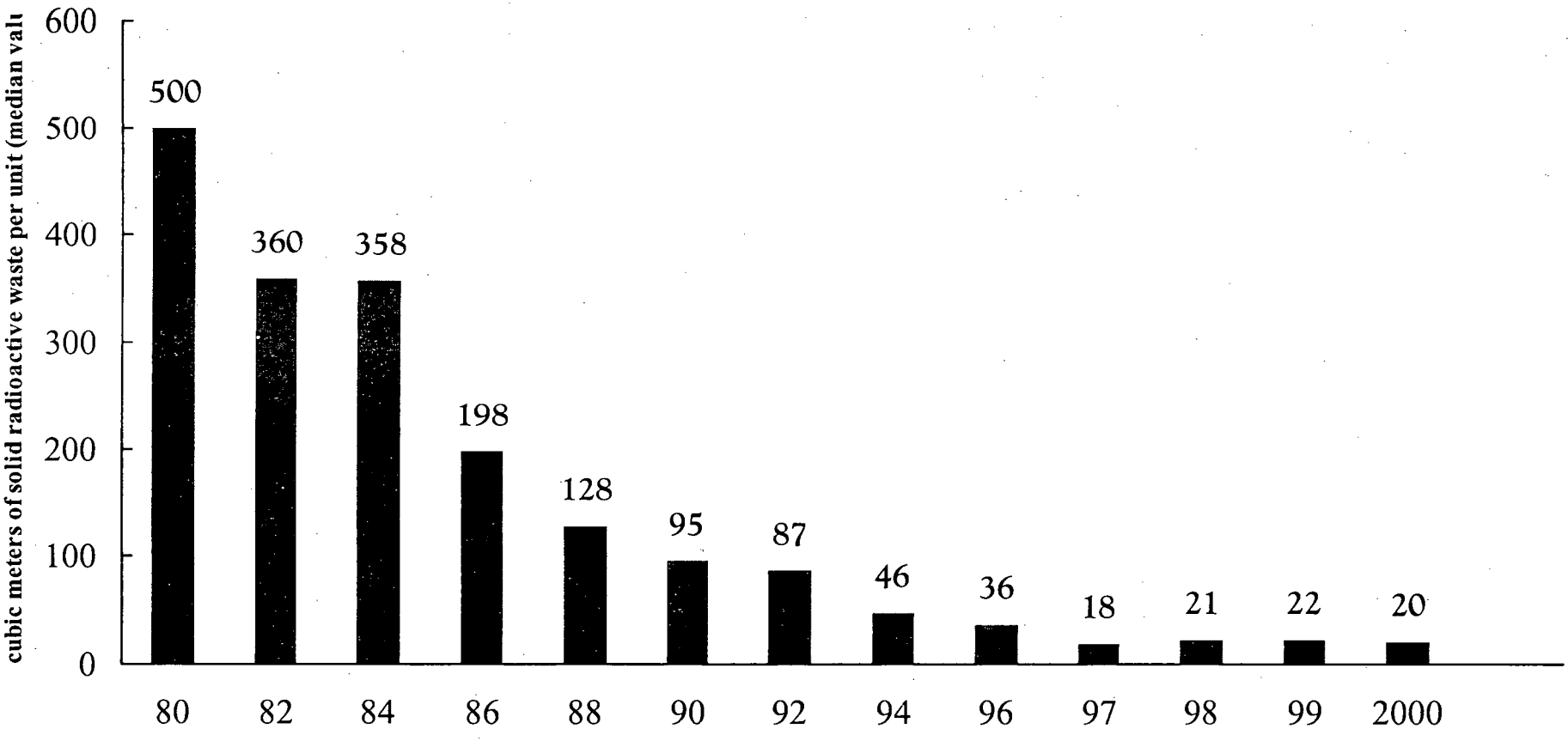
# Key Messages

- **LLW program in maintenance mode**
- **Substantial external and internal pressures**
- **LLW volume reduced, safely disposed or stored**

# NRC LLW Program



# Volume of Low-Level Solid Radioactive Waste (PWRs)




*Source: WANO 2000 Performance Indicators and NEI*

# Key Messages (continued)

- **Adequate disposal capacity but some lack of disposal access**
- **No disposal pathway for GTCC waste at present**
- **Waste classification could be more risk-informed and performance oriented**

# Major Accomplishments

- Strategic Assessment
- RIS for Fuel/Materials Interim Storage
- DU Analysis for SECY 08-0147
- Modified inspection procedures
- WCS Exemption Review

# LLW Strategic Assessment

- Rationale: respond to new pressures; prioritize work
- Rigorous analysis of 20 issues
- Seven high priority tasks identified
- Meeting Strategic Assessment plan and schedule

# Stakeholder Outreach

- LLW Strategic Assessment
- Agreement States
- Public meetings with NEI/EPRI
- Numerous other stakeholder interactions

# Conclusions

- **Industry innovations may pose policy issues**
- **Commission LLW rulemakings**
- **Anticipating or reacting to external challenges**

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# Status of Low-Level Waste Activities

**April 17, 2009**

**James Kennedy, Sr. Project Manager**

**Low-Level Waste Branch DWMEP/FSME**

# LLRW Policy Amendments Act of 1985

- Management on regional basis
- Past NRC views

# US Disposal Capacity Considerations

- Current generation rates
- Current limitations
- New disposal/processing options
- New waste streams

# US Disposal Capacity Considerations (cont.)

- Changes in generation rates
- DOE use of commercial facilities
- 4 "categories" of LLW

# U.S. Disposal Capacity Current Generation Rates

- GTCC – several thousand $ft^3/yr$
- Class B/C – about 10X GTCC volumes
- Class A – about 1000X GTCC volumes
- LAW – on order of Class A volumes

# U.S. Disposal Capacity
# Current Options

- GTCC
- Compacts with regional facilities
- Other generators, Class B/C
- Class A
- LAW

# U.S. Disposal Capacity Changes in Generation Rates

- New waste streams
- Reactor decommissioning
- New reactors

# U.S. Disposal Capacity Challenges

- GTCC
- Class B/C
- Class A
- LAW

# LLW Strategic Assessment High Priority Tasks

- LLW storage guidance
- Procedures for LAW disposal
- Procedure for import/export reviews
- Guidance for alternate waste classification (10 CFR 61.58)

# LLW Strategic Assessment High Priority Tasks (cont.)

- Scoping study of financial assurance for sources
- DU disposal analysis
- Concentration averaging guidance (blending)

# Risk-Inform Waste Classification

- SRM for SECY-08-0147
- Part 61 framework
- International waste classification system
- Stakeholder outreach

# Blending

- Significant stakeholder interest
- Industry initiatives
- Regulatory and technical issues

# Conclusions

- LLW disposal capacity
- Specific tasks/Strategic Assessment
- Future Commission direction

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# Management of LLW at Operating Power Plants

## April 17, 2009


## Steve Garry, C.H.P.

## Senior Health Physicist

## Reactor Inspection Branch DIRS/NRR

# RIS 2008-32
## LLW Storage at Reactor Sites

- **Consolidated and clarified NRC LLW positions**
  - **LLW storage must meet NRC requirements for ALARA, monitoring, labeling, and record keeping**
  - **Construction of new LLW storage facilities must meet 10 CFR 50.59**

# RIS 2008-32
# LLW Storage at Reactor Sites (cont.)

- Power reactors and research and test reactors are already licensed to store radioactive materials
- Separate Part 30 license not needed

# RIS 2008-32
# LLW Storage at Reactor Sites (cont.)

- Safe storage considerations
  - Container integrity from corrosion
  - Packaging and storage to prevent explosive gas generation

# Regulatory Guide 1.143

- RG 1.143, "Design Guidance For Radioactive Waste Management Systems, Structures, and Components ....."
- Provides design and construction guidance for new LLW storage facilities

# EPRI Guidelines for Operating LLW Storage Facilities

- Includes guidance on interim LLW storage
- Acknowledges that volume reduction and concentration of Class B/C waste to GTCC is technologically feasible

# NRC Reviewed EPRI Guidelines

- **Acknowledged that EPRI LLW Operating Guidelines were consistent with NRC guidance**

  **except:**

- **Did not take a position that volume reduction and concentration of Class B/C to GTCC was consistent with NRC guidance**

# Waste Transfer to Off-Site Radwaste Processors

- **Studsvik (Erwin, TN)**
  - **Licensed by State of Tennessee**
  - **Co-mingling waste from different generators**
  - **Volume reducing Class B/C waste to a stable Class B/C waste form**

# Waste Transfer to Off-Site Radwaste Processors (cont.)

- **Studsvik (Erwin, TN)**
  - **New stable waste form is "attributable" to Studsvik who is classified as the waste generator**
  - **Stored (not disposed) at WCS with financial assurance until first available disposal site opens**

# Waste Transfer to Off-site Radwaste Processors

- **Duratek, Inc (Oak Ridge, TN)**
  - **Licensed under State of Tennessee**
  - **Approved, temporary pilot testing of of equipment and processes for blending**
  - **Potential disposal at the Energy Solutions facility at Clive, UT**

# Conclusions

- **Class B/C waste is being safely stored on-site**
  - **NRC has guidance for on-site storage**
  - **EPRI has guidance for operating LLW storage facilities**

# Conclusions (cont.)

- Class B/C waste is being volume reduced to a stable form and stored as Class B/C waste in Texas
- Potential blending and disposal as Class A waste in Utah

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# Reactor Decommissioning

**April 17, 2009**

**John Buckley, Sr. Project Manager**
**Decommissioning Branch DURLD/FSME**

# Reactor Decommissioning Activities

- Decommissioning reactors
  - 14 Power reactors
- Guidance
  - NUREG-1757
  - NUREG-1700

# Power Reactors Decommissioned to Date

- 3 Power reactors pre-LTR
- 6 Power reactors under LTR

# Reactor Decommissioning Waste

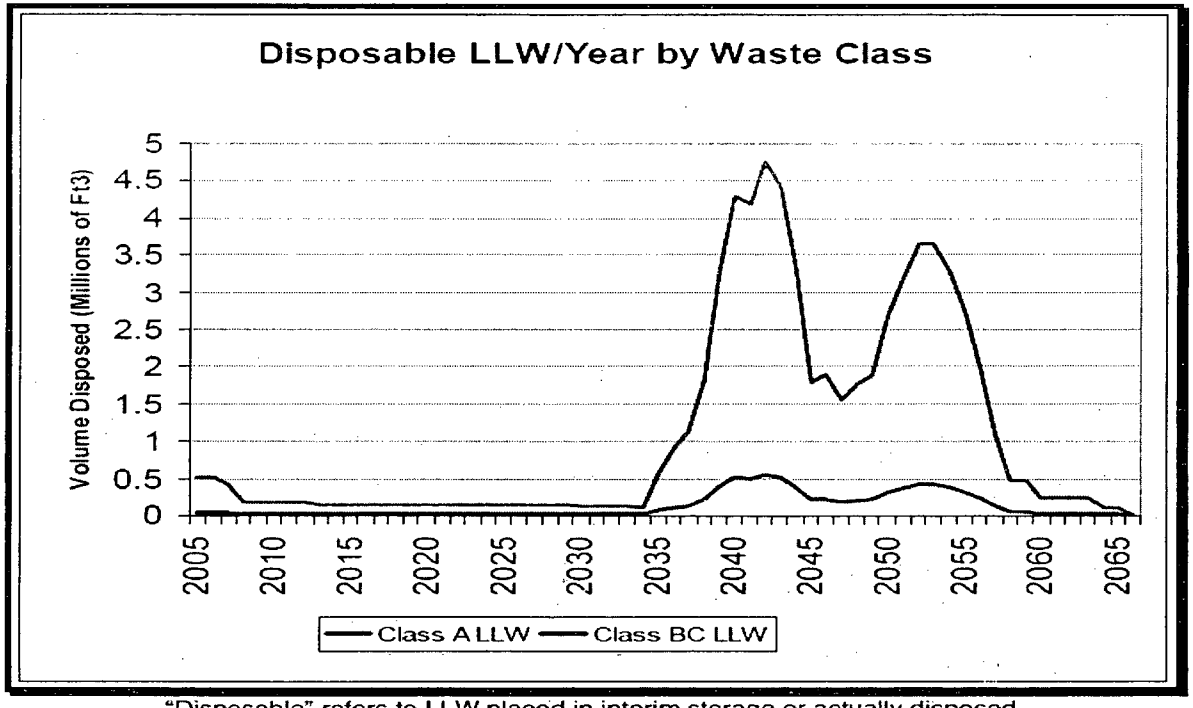
- Waste forms
- Predicting volumes
  - NUREG-0586
  - Decommissioning updates

# Waste Disposal Paths

- Low activity waste
- Class A
- Class B/C
- On-site storage

# Waste Capacity Required in Future

- **EPRI, December 2006**




"Disposable" refers to LLW placed in interim storage or actually disposed.
(The applicable metric conversion factor is 35.3 $ft^3/m^3$)

# Conclusions

- Class A waste disposal options available
- Class B/C waste disposal options limited
- Large volume of decommissioning waste on horizon

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# Regional Perspectives on Low-Level Waste and Sealed Sources

## April 17, 2009


## Daniel Collins, Deputy Director

## Division of Nuclear Materials Safety

## Region I

# Inspection Process

- Inspection of LLW management
  - Captured in routine safety inspection procedures
  - Two procedures revised to consider security
  - Few escalated enforcements
- Data not collected by inspection

# Experience During Decommissioning

- Large quantities of Class A waste handled safely
- Currently, no major backlog
- Some challenges with Class B/C waste

# Waste Management Experience at Materials Facilities

- Mostly non-radioactive and Class A waste
- Licensees anticipated Barnwell closure
- Low volumes of Class B/C waste
- Packaging guidance important
- Unique challenges

# Disposition of Sealed Sources

- Shipped back to manufacturer
- Transferred to other licensees
- Recovered by the Off-Site Source Recovery Project
- Conference of Radiation Control Program Directors, Inc.
- Sources awaiting transfer stored safely

# Reactor Class B/C Waste

- Power Reactors
  - Resin waste managed safely
  - Irradiated components stored in fuel pools
  - Evaluating storage in shielded canisters

# Reactor Class B/C Waste

- Research & Test Reactors
  - No current problems with Class B/C waste
  - Very little waste produced
  - Barnwell closure anticipated
  - Future disposal concerns

# Conclusions

- Minimal backlog of waste in U.S.
- Sealed sources safely managed
- Licensees in Puerto Rico need disposal options
- Inspection process provides awareness

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# Risk-Informing LLW Management

**April 17, 2009**


## Michael T. Ryan

**Advisory Committee on Reactor Safeguards**

# LLW Rules

- § 61.41 Principle Protection Requirements (Members of the Public)
- § 61.55 Waste Classification Tables (Deterministic Result for a Generic Site)
- § 61.58 Alternative Requirements for Waste Classification

# Risk Metrics for Waste

- **Concentration – Best Used as a Metric for Operational Risks**

- **Quantity – Best Used as a Metric for Disposal Risks**

# Concentration

- **Radiation Protection**
  - **Worker Protection to External Exposure**
- **Shipping Cask Operations**
  - **Compliance with Dose-Rate Limits**

# Quantity

- **For Disposed Radioactive Material**
  - **Local Concentrations Do Not Matter**
  - **Total Quantities Released From the Site Do Matter**

# Area for Improvements

- **Greater Emphasis on Risk-informed Approach to LLW Management**

- **Focus on Radionuclide Content Rather than Waste Origins or Concentrations**

# Areas for Improvements

- **Need to Focus on Extended Storage of Class-B and Class-C LLW**

- **RCRA Subtitle-C and Subtitle-D Sites are Suitable for Certain Types of LLW and LAW**

# Approaches for Improvements

- **Risk-informed Waste Determinations Have Been Successfully Performed for...**
  - **Savannah River**
  - **Idaho National Engineering Labs**

# Approaches for Improvements

- **Risk-inform the Characteristics of:**
  - **Waste**
  - **Waste Package**
  - **Disposal Technology Below-Grade**
  - **Cover Technology Above-Grade**
  - **Geohydrology and Geology**

# Approaches for Improvements

- **Specify the Methods and Perform a Risk-informed Assessment**

- **Use the Results to Specify Site-specific Quantities/Limits for the Expected Wastes within the Bounds of the Risk Assessment**

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# Briefing on Low-Level Waste Program

## List of Acronyms

## April 17, 2009

**ACRS: Advisory Committee on Reactor Safeguards**
**ALARA: As Low As is Reasonably Achievable**
**CFR: Code of Federal Regulations**
**CHP: Certified Health Physicist**
**DIRS: Division of Inspection and Regional Support**
**DOE: U.S. Department of Energy**
**DU: Depleted Uranium**
**DURLD: Decommissioning and Uranium Recovery Licensing Directorate**
**DWMEP: Division of Waste Management and Environmental Protection**
**EPRI: Electric Power Research Institute**
**FSME: Office of Federal and State Materials and Environmental Management Programs**
**FTE: Full-time Equivalent**
**GAO: Government Accountability Office**
**GTCC: Greater-than-Class C Waste**

**ICRP: International Commission on Radiation Protection**
**LAW: Low-Activity Waste**
**LLW: Low-Level Waste**
**(LLRW: Low-Level Radioactive Waste)**
**LTR: License Termination Rule**
**NAS: National Academy of Science**
**NNSA: National Nuclear Security Administration**
**NRC: U.S. Nuclear Regulatory Commission**
**NRR: Office of Nuclear Reactor Regulation**
**PWR: Pressurized Water Reactor**
**RCRA: Resource Conservation and Recovery Act**
**RG: Regulatory Guide**
**RIS: Regulatory Information Summary**
**SECY: Office of the Secretary**
**SRM: Staff Requirements Memoranda**
**WCS: Waste Control Specialists**

# DOE LLW Management

**Frank Marcinowski**
Deputy Assistant Secretary for Regulatory Compliance
Office of Environmental Management
U.S. Department of Energy

**17 April 2009**

# DOE LLW Management Overview

- **DOE-generated wastes are managed under DOE Order 435.1, *Radioactive Waste Management*, pursuant to Atomic Energy Act authorities**
  - **DOE policy reflect preference for use of onsite disposal where feasible, or use of other DOE facilities**
  - **Commercial facilities can be used by exception, when deemed cost effective and in government's best interest**
  - **10 CFR 61.55 Waste Classifications only apply to DOE wastes if shipped to licensed treatment and disposal facilities**

# EM Policy Overview

- **Historically, most (88%) LLW/MLLW disposed of in US was generated by DOE activities**
  - **FY1990-FY2008, approximately 9.6 million $m^3$ of DOE wastes disposed**
  - **In same period, 1.3 million $m^3$ of non-DOE LLW/MLLW was disposed in commercial facilities**
- **Most DOE generated LLW/MLLW results from decommissioning and site cleanup activities**
  - **FY1990-FY2008, about 70% was disposed on site where generated, with 10% at other DOE sites and 20% at commercial facilities**

# DOE LLW Management Overview

- **DOE updates its lifecycle LLW/MLLW forecasts annually and makes this information publically available in the Waste Information Management System (WIMS)**

- **Latest update estimates nearly 2.2 million $m^3$ of LLW/MLLW will be generated FY2009-2015**
  - **Vast majority targeted to be disposed on site**
  - **DOE plans to continue use of Nevada Test Site and, as appropriate, commercial disposal**
  - **Some uncertainty exists on future disposal capacity for higher activity MLLW**

**WIMS can be found at http://wims.arc.fiu.edu/WIMS**

# DOE LLW Management Overview

- **The Low Level Radioactive Waste Policy Act, as Amended (1985), assigns DOE certain responsibilities related to civilian-generated LLW**
  - **DOE maintains strong working relationship with States and Regional Disposal Compacts**
  - **DOE maintains database on volumes of civilian-generated LLW disposed**
  - **DOE remains abreast of issues related to commercial LLW disposal**

# GTCC LLW Disposal EIS Update

- **DOE has statutory responsibility to provide disposal capability for GTCC LLW generated by NRC/Agreement State licensees**
- **DOE is preparing EIS for disposal of commercial GTCC LLW and DOE "GTCC-like waste"**
- **EIS scope includes 11,000 $m^3$ of stored and projected waste including activated metals, sealed sources, and other waste (e.g., contaminated debris)**
  - **7,300 $m^3$ from the commercial sector**
  - **3,700 $m^3$ from DOE activities**

# GTCC LLW Disposal EIS Update

- **Disposal alternatives being evaluated include:**
  - **Deep geologic disposal at WIPP and proposed Yucca Mountain Repository**
  - **Enhanced near surface (ENS) disposal at Hanford, INL, LANL, NTS, ORR, SRS, WIPP vicinity, and generic commercial locations**
  - **Intermediate depth borehole location at the same ENS locations, except SRS and ORR**
- **Preliminary Draft EIS has been completed and is undergoing internal review.**
- **Goal is to issue Draft EIS in 2009 and Final EIS in 2010**
- **Before issuing ROD, DOE must submit a Report to Congress on disposal alternatives and wait Congressional action**

*For additional information on the GTCC EIS visit http://www.gtcceis.anl.gov/*

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# SEALED SOURCE RECOVERY

**April 17, 2009**

**Abigail Cuthbertson**
**Federal Project Manager, Offsite Source Recovery Project**

**Office of Global Threat Reduction**
**National Nuclear Security Administration**
**U.S. Department of Energy**

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# GTRI Mission and Program Goals

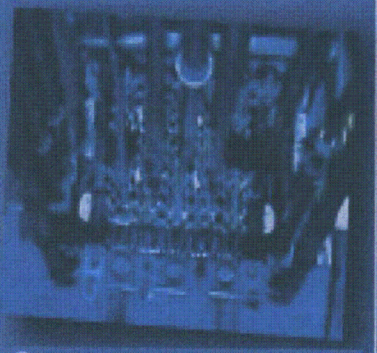
**DOE STRATEGIC GOAL 2.2**

Prevent the acquisition of nuclear and radiological materials for use in weapons of mass destruction and other acts of terrorism

**GTRI MISSION**

Reduce and protect vulnerable nuclear and radiological material located at civilian sites worldwide.

## Convert



**Convert** research reactors from the use of highly enriched uranium (HEU) to low enriched uranium (LEU)

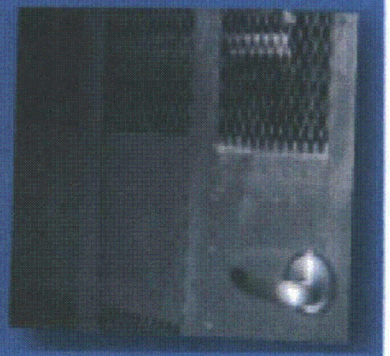
These efforts result in permanent threat reduction by minimizing and, to the extent possible, eliminating the need for HEU in civilian applications – each reactor converted or shut down eliminates a source of bomb material.

## Remove

**Remove** and dispose of excess nuclear and radiological materials; and

These efforts result in permanent threat reduction by eliminating bomb material at civilian sites – each kilogram or curie of this dangerous material that is removed reduces the risk of a terrorist bomb.

## Protect



**Protect** high priority nuclear and radiological materials from theft and sabotage

These efforts result in threat reduction by improving security on the bomb material remaining at civilian sites – each vulnerable building that is protected reduces the risk until a permanent threat reduction solution can be implemented

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# Off-Site Source Recovery Requirements

**Pre-9/11 Source Recovery**

- Late 1970's – 1999 – DOE Defense Programs begins recovering Pu-239 sources for potential reuse of the radioactive material (approximately 1,100 sources).
- 1992 - NRC and DOE agreement provides a framework for DOE/EM acceptance of sources identified by NRC as a **threat to public health and safety**
- 1999 – DOE/EM established the Offsite Source Recovery Project (OSRP) to recover and permanently dispose of excess, unwanted Greater-Than-Class-C (GTCC) sealed sources including Am-241, Cm-244, Cs-137, Pu-238, Pu-239, and Sr-90
- 1999 - DOE/EM and NRC sign MOU Concerning Management of Sealed Sources

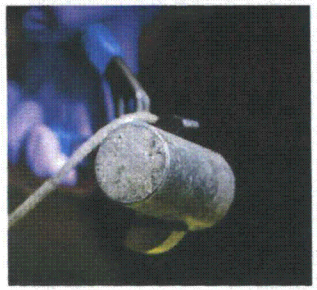
**Post-9/11 Threat Reduction**

- 2002 – In response to 9/11, NRC Chairman Meserve requests DOE to "consider the acceleration of its recovery of unwanted radioactive materials through the Offsite Source Recovery Project"
- 2003 – OSRP is transferred to DOE/NNSA; and GTRI after formation in 2004

**Further Expansion**

- Scope expanded beyond the GTCC isotopes due to **national security concerns** (2004)
- Included four additional isotopes: Cf-252, Co-60, Ir-192, and Ra-226 as well as Class A-C quantities of Cs-137 and Sr-90
- GTRI, in coordination with NRC, has developed a recovery prioritization criteria based on threat reduction mission

FY2009 Budget Language: **"Removing domestic radiological materials by working in cooperation with Federal, State, and local agencies, and private industry to recover and permanently dispose of excess radiological sources in the United States."**


Pictures of Sunnyvale recovery reported by the L.A. Times

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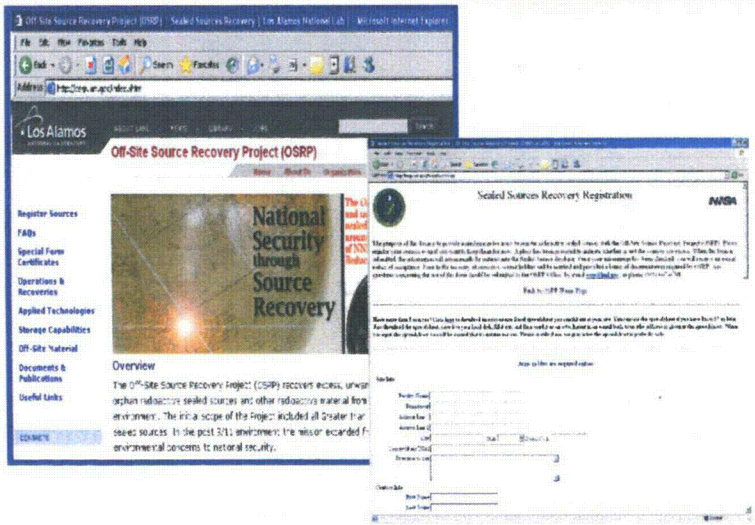
# GTRI Source Recovery

- Basic recovery steps
  - Register via GTRI OSRP website
  - Analyze transportation and container situation
  - Package sources
  - Transport to secure storage
  - Permanent disposition
- Cumulative recoveries to date
  - 21,243 sources recovered (as of March 31, 2009)
  - 717,339 total Curies
- FY2008 recoveries
  - 3,153 sources recovered
  - 544,181 total Curies
- Current backlog of sources
  - 9,391 sources in backlog
  - 2,114,165 Total Curies



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# Disposal Challenges

**#1 - Lack of commercial disposal for high-activity beta/gamma sources (primarily Co-60, Cs-137, and Sr-90) in wide use primarily in medical and irradiation applications**

**#2 - Lack of disposal for lower-activity beta/gamma (Cs-137, Co-60, and Sr-90) sealed sources in 36 states**

**#3 - Significant increase in foreign-origin Am-241 used in the U.S.**

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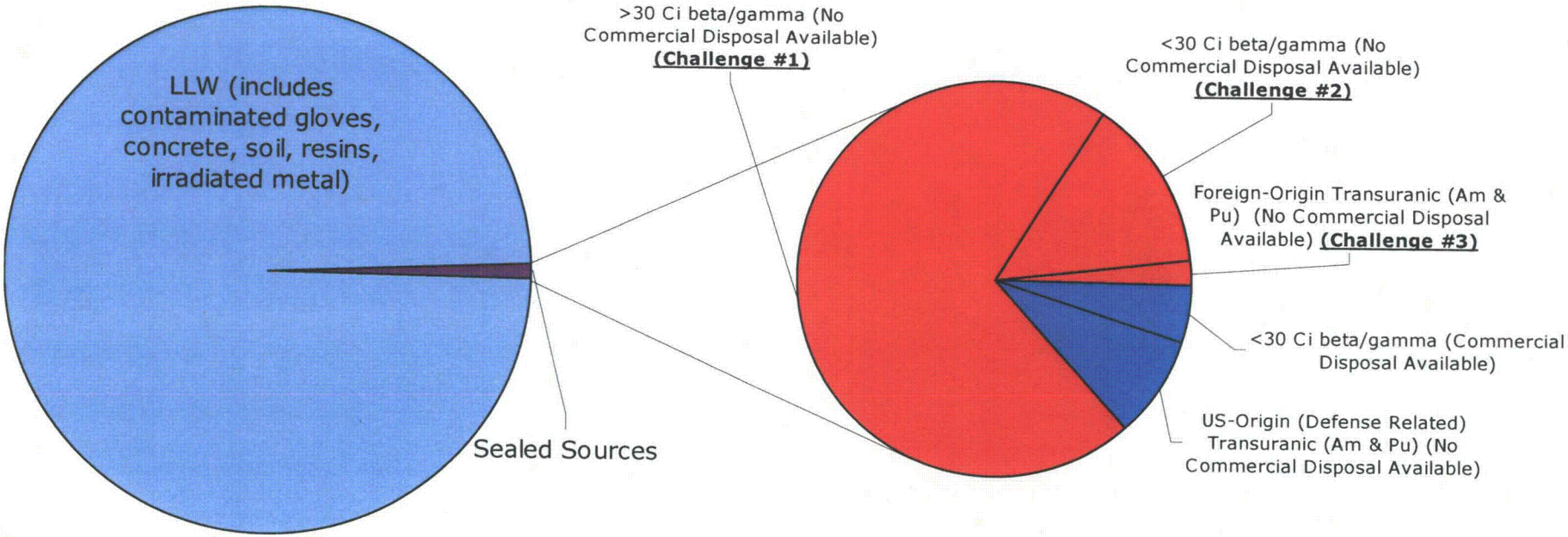
# Problem Scope: Low Level Waste By Activity (Notional)




**Total LLW Total LLW (Sealed Sources <1%)**

**Sealed Sources**

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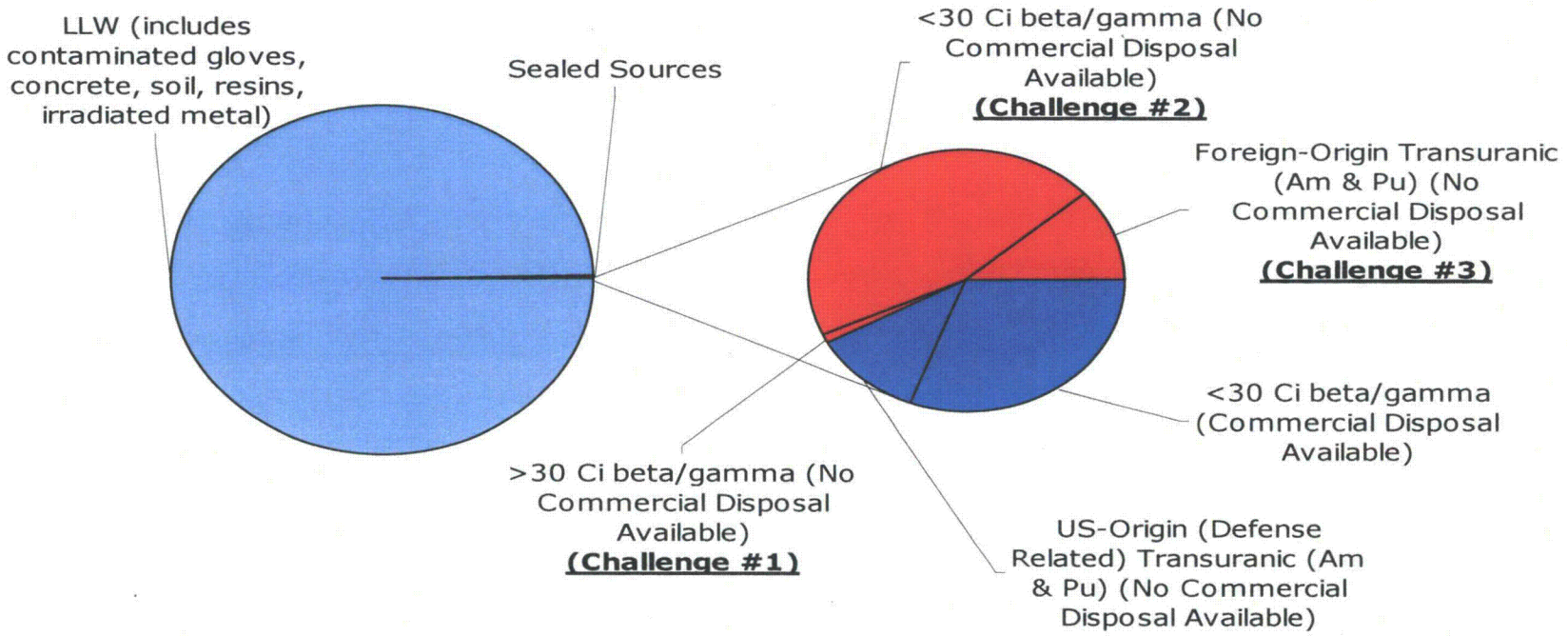
# Problem Scope: Low Level Waste By Volume (Notional)




**Total LLW (Sealed Sources <1%)**

**Sealed Sources**

# Focus Group on Recovery and Disposition Options for Disused Radioactive Sealed Sources:

- **Information Paper approved by DHS-led public/private-sector Government Coordinating Council/Sector Coordinating Council (GCC/SCC) in December 2008**
- **Five meetings since early February 2009**
- **Participants from Federal & State governments, Compacts, Private Sector**

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# Objectives

**Develop a clear, concise, single message on the potential national security concerns presented by the lack of commercial disposition options for sealed sources (Problem Statement).**

**Convey that not all low-level radioactive waste (LLW) is a potential national security concern; only a small and manageable subset comprising sealed sources.**

**Investigate and recommend immediate and long-term options to address the threat (Solutions).**

**Develop a message delivery strategy to include target audience and the GCC participants who will deliver the message (both Problem and Solution).**

# Working Problem Statement



## Adopted 2/20/2009

**The lack of disposal pathways for radioactive sealed sources (which make up less than 1% of all low level radioactive waste by volume and activity) poses a potential national security concern. During their service life, these sources have numerous critical and beneficial medical, industrial and research applications. However due to their high activity and portability they can potentially be used in radiological dispersal devices commonly referred to as "dirty bombs," resulting in economic impacts in the billions of dollars and significant social disruption. Every year, thousands of sources become disused and unwanted in the United States. While secure storage is a temporary measure, the longer sources remain disused or unwanted the chances increase that they will become unsecured or abandoned. Thus, permanent disposal is essential. However, there are significant political, statutory and regulatory challenges associated with disposal.**

# Conclusion

**Focus Group is currently considering any and every option (new and existing facilities)**

**Disposal is important as both an end in and of itself and a prerequisite for storage**

**There is no one perfect solution**

**Continued Federal, State, Compact, Private-Sector engagement is critical**

# The state perspective on LLW management issues

## April 17, 2009


## Mike Dunn, Manager, Radioactive Material Licensing Group, Texas Department of State Health Services

## Organization of Agreement States

# Additional factors affecting Licensee decisions

- **Existing economic uncertainty will make licensee business decisions difficult**
- **Short term licensee strategy to keep and hold unused sources will obviously lead to security issues**

# Factors
## cont'd

- **Long term licensee strategy to reduce inventories of sources will impact available broker storage capacity**
- **Attempts to transfer for disposal while there still remains some capacity at waste broker sites**

# Factors
## cont'd

- **Licensee decision makers not making safety and security issues a priority**

# Specific Market trends :

- **Downturn in Gulf Coast Petrochemical Industries caused by low demand for products resulting in idle and damaged plants**
- **Oil and gas outlook - lower demand and plummeting working oil and gas rig count**
- **Medical issues resulting in idle units**

# Specific Market trends :

## Cont'd

- Industrial Radiography sources are also used in construction and petrochemical and have short half-life isotopes with relatively short useful life
- Beneficial reuse of excess sources by manufacturers (Green sourcing) can be a logistically difficult process

# State Regulatory Concerns

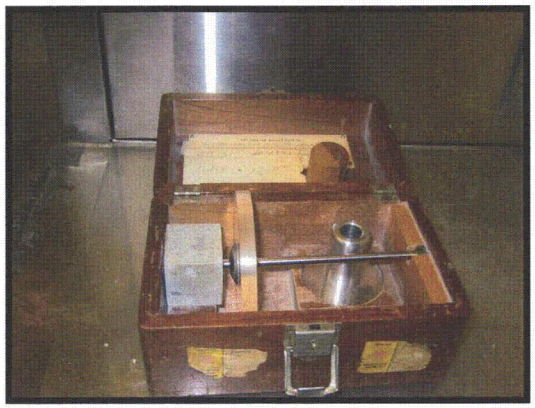
- **Sources with limited accountability ending up in public domain including registered and unregistered Generally Licensed sources**
- **Resources for immediate response to business closings and bankruptcies**

# State Regulatory Concerns
## cont'd

- High costs and limited access associated with moving sources using Type B casks to move material to more secure site
- Availability of state resources to respond and investigate loss of control incidents

# State Regulatory Concerns
cont'd

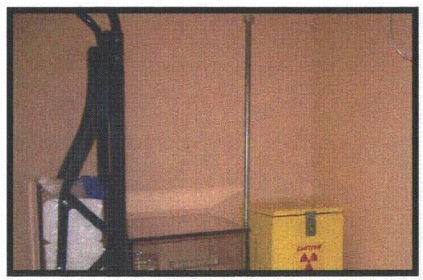
- Availability of state resources to impound and hold sources as necessary
- High costs of disposal causing hardships to small businesses and loss of control issues
- Limiting scope or funding of Off-Site Source Recovery Project



# Disposal Capacity and Impact of Sealed Source Users

Debbie Bray Gilley
Conference of Radiation Control Program Directors

April 17, 2009



# State Issues

- Abandoned sources
- Unauthorized Possession of Sources
- Bankruptcy and Adequate Safety and Security of Sources
- Lack of Regulatory Support for Source Manufacturers to Accept Used Sources With Replacement of Sources
- Disused Sources Stored at Licensed Facilities
- No Regulatory Authority for "Storage Only" License
- Lack of State Assets for Temporary Storage
- Need for Guidance on Financial Assurance Issues

# State Initiatives

- Successful CRCPD Orphan Source Program
- Successful Source Collection and Threat Reduction Program
- Successful Disposal Options for 14 states with disposal pathways
- Isotopic Specific Disposal Pathways (Radium)

# Recommendations

- Continue a national forum to find solutions to sealed source disposal
- Continue funding the "Orphan Source" Program for all states
- Support DOE funding for SCATR activities
- Encourage manufactures to take back "used sources" for reprocessing
- Encourage current waste compacts to take out-of-compact waste
- Consider licensing long term storage facilities
- Encourage current compacts to take discrete specific sources for SCATR roundups

# Thank You

## Abbreviations

| | |
|---|---|
| CRCPD | Conference of Radiation Control Program Directors |
| OAS | Organization of Agreement States |
| DOE | Department of Energy |
| OSRP | Off Site Recovery Program |
| SCATR | Source Collection and Threat Reduction |

# Texas Regulatory Perspective on Low-Level Radioactive Waste Management

**April 17, 2009**

**Susan Jablonski, P.E., Director,**
**Radioactive Materials Division,**
**Texas Commission on Environmental Quality**

# State Policy Privatizing Disposal

- Private competitive proposals
- Limiting criteria for site selection
- Ability to condemn private mineral rights
- A separate, adjacent federal disposal facility for mixed waste would be allowed under one license for the Texas Compact waste facility

# Pending Action – Steps to Issue

- ***Licensing order*** **denying hearing requests - license may not be issued, signed or granted until fee simple ownership has been demonstrated**
- **Condemnation proceeding to be filed by State of Texas to pursue remaining mineral rights**

# Once Issued - Before Construction

- **Transfer of land and State lease-type agreement with operator**
- ***Pre-Construction License Conditions* requiring additional site information to verify the characterization provided in the application to address data gaps and areas of uncertainty prior to approving construction**

# Before Disposing Waste

- New performance assessment using models/codes capable of addressing site's complexities with updated characterization
- Secretary of Energy agreement to accept all right, title and interest in the federal waste facility
- Financial assurance and operating procedures review

**PREPARED STATEMENT OF**

**LEONARD C. SLOSKY**

**CHAIR-ELECT OF THE LOW-LEVEL RADIOACITVE WASTE FORUM, INC.**

**AND THE**

**ROCKY MOUNTIAN LOW-LEVEL RADIOACTIVE WASTE BOARD**

**REPRESENTING THE LOW-LEVEL RADIOACTIVE WASTE FORUM, INC.**

**AND THE STATES OF SOUTH CAROLINA, UTAH AND WASHINGTON**

**FOR THE U.S. NUCLEAR REGULATORY COMMISSION**

**MEETING ON LOW-LEVEL RADIOACTIVE WASTE**

**APRIL 17, 2009**

I am Leonard C. Slosky, the Chair-Elect of the Low-Level Radioactive Waste Forum (LLW Forum) and the Executive Director of the Rocky Mountain Low-Level Radioactive Waste Board.

This statement is presented on behalf of the LLW Forum and the States of South Carolina, Utah, and Washington, as well as the Atlantic Interstate Low-Level Radioactive Waste Compact (Atlantic Compact) and the Northwest Interstate Compact on Low-Level Radioactive Waste Management (Northwest Compact). Although the State of Texas is an active and vital participant in the LLW Forum, Susan Jablonski of the Texas Commission on Environmental Quality will be participating in the briefing, and I therefore refer you to her remarks for the state's perspective.

As you may be aware, the LLW Forum was originally established to facilitate state and compact implementation of the Low-Level Radioactive Waste Policy Act and its 1985 Amendments and to promote the development of safe and cost-efficient waste management opportunities for low-level radioactive waste generators. In 2000, the organization incorporated into a non-profit entity and expanded our membership to include all interested stakeholders. Today, we count among our members and subscribers all 9 operating regional compacts, 11 host and unaffiliated states, 5 federal agencies (DOE, EPA, NRC, Army and the Corps of Engineers), all low-level radioactive waste disposal site operators (Barnwell, Richland, Clive, Clean Harbors and WCS), various waste brokers and processors, several individual utilities (as well as the Nuclear Energy Institute), user groups and associations, and other interested stakeholders.

I am first going to provide some observations based on my 30 years of active involvement on issues related to low-level radioactive waste (LLW) disposal and management. I will then make comments on issues that are shared by the three sited states and compacts. Thirdly, I will provide comments that are specific to a state and compact. Lastly, I will mention several emerging issues.

## Observations

While the compact system has not produced as many new LLW disposal facilities as expected in 1985, it is important for everyone to recognize that it is the compact system that allows the existing LLW disposal facilities to remain operating and has allowed Texas and WCS to reach the threshold of constructing a new disposal facility.

I have been involved in this issue since 1979 when the three sited states – South Carolina, Washington, and Nevada – said that they would no longer shoulder the burden of disposing of all on the nation's LLW.

While many aspects of LLW have changed over the last 30 years, one has remained constant – states are unwilling to host LLW disposal facilities unless they have the ability, through compacts, to control the flow of waste to the disposal sites.

Thus, the greatest threats to the LLW disposal system are those that jeopardize the ability of states and compacts to control the wastes to be received by the disposal facilities.

The most imminent of these threats is the lawsuit by Energy*Solutions* challenging the exclusionary authority of the Northwest Compact over the Clive, Utah disposal facility. While count one of the lawsuit is specific to the Clive facility, if Energy*Solutions* is successful on counts two or three, all of the compacts could loose their exclusionary authority.

As I discuss the positions of the three sited states/compacts, I will outline other issues that also have the potential to destabilize the LLW disposal system.

As the NRC and others implement existing programs and consider changes to regulations and guidance to "solve" particular waste disposal problems, the cumulative impact on the existing and potential new disposal facilities should be carefully considered. For example, approval of alternate disposal, disposal of waste at Resource Conservation and Recovery Act (RCRA) facilities, down-blending of Class B and C waste – may make sense in the particular situation; however, such actions decrease the demand for new LLW facilities. Only when the "demand" for LLW disposal is sufficient will new facilities be developed.

## Common Comments

The Atlantic Compact and the State of Washington have stated that efforts to require the Barnwell or Richland, Washington sites to take non-regional waste (including foreign-

generated waste), either through change in federal law or policies, litigation, or grants of emergency access, would most likely result in the complete closure of the both facilities.

The sited compacts and states are concerned with activities that may circumvent the ban on non-regional waste at the Barnwell and Richland facilities by obscuring the identification of the original generator of waste such as:

> Recent policy changes in Tennessee and practices by waste processors in Tennessee and other states that attribute waste only to the waste processing facility and not to the original generator.
>
> Possible attempts to transport radioactive material into the sited compact regions and re-manifest it as compact waste.

The NRC and Agreement States should carefully consider the consequences that changes in regulations and policy have on the site states and compacts in this regard.

**Atlantic Compact and South Carolina**

South Carolina joined the Atlantic Compact to conserve the remaining space at the Barnwell disposal site so that disposal capacity would be available when the state's nuclear plants decommission.

The Atlantic Compact, the State of South Carolina, Chem-Nuclear, and the 6 nuclear utilities in the region have put together plans that should ensure the economic viability of the Barnwell site through mid-century, at reasonable disposal rates.

The Atlantic Compact Commission has stated that it is very unlikely that South Carolina elected officials would entertain the idea of amending the law to expand access to the Barnwell site – even for specific waste types such as sealed sources.

Atlantic Compact generators view regional disposal at Barnwell only as the current preferred option, and will continue to monitor the development of other options across the United States.

Barnwell site characteristics have proven less than ideal, with relatively fast groundwater travel times that have resulted in high tritium levels some distance from the waste disposal cells. As a result, expensive environmental remediation may be necessary at some time in the future.

**State of Utah**

The Energy*Solutions* Clive, Utah facility continues to operate in a safe and compliant manner. Waste volumes have trended significantly downward since 2005 when 25 million cubic feet were received to approximately 4 million cubic feet anticipated being received in 2009. Waste origin has also changed significantly from predominately government waste in 2005 to almost even volumes of government waste and commercial waste in 2009.

Foreign waste receipt continues to be an issue of concern for Governor Huntsman. He remains opposed to all efforts by Energy*Solutions* to receive foreign waste. During the 2009 General Legislative Session, the Governor opposed a proposal by Energy*Solutions* to provide "hundreds of millions" of dollars to the State of Utah in exchange for Utah's approval to accept foreign waste. This proposal did not advance to a formal piece of legislation during the 2009 General Session.

The State of Utah is a defendant in the Energy*Solutions* versus Northwest Compact lawsuit, in which Energy*Solutions* is challenging the Northwest Compact's authority to deny foreign waste access to the Clive facility. Also, on June 10, 2008, the State of Utah petitioned to intervene in Energy*Solutions'* application to the NRC, to allow the importation of radioactive waste from nuclear facility operations in Italy.

The State of Utah continues to closely follow NRC efforts to update rules, policy, and guidance in several areas. The Clive facility is only authorized to take Class A LLW as a matter of state statute and policy. The following issues that might allow Class B and C waste to be reclassified are of utmost concern to the State of Utah:

- Concentration averaging.
- Blending of LLW that could allow waste classification to change Class B or C waste to Class A waste.
- Changes to the current waste classification system such as redefining Class A, B, and C wastes.

Changes in such policies could have the effect of making the Clive facility the de facto national disposal site for all classes of LLW. This would also further discourage development of new disposal facilities.

Only two areas at the Clive facility are now licensed to receive LLW. There is a much larger third area licensed for 11e.(2) mill tailings disposal. Currently under review is conversion of the remaining 11e.(2) capacity to LLW capacity. A major hurdle here will

be the willingness of the U.S. Department of Energy (DOE) to take ownership, upon closure, if the proposed cell design is approved to accept LLW. If Energy*Solutions* cannot obtain DOE concurrence with their current design proposal, the company may offer a different design that could segregate the cells.

**Northwest Compact**

In addition to the concern about down-blending waste, the Northwest Compact is very concerned with the potential for waste blending being implemented in a manor that obscures the original generator. Will waste processors be allowed, for example, to collect spent resins from utilities across the nation and then, following processing, attribute the blended waste to only the waste processor?

If waste processors are allowed to identify the waste, following processing, as only their own waste, processors may locate in the sited compact regions, collect waste from states outside of the compact region, and attempt to circumvent the ban on non-regional waste by disposing of the waste as their own.

The NRC's foreign waste import license application process could be improved. Import license applications need to clearly provide complete information identifying all disposition pathways for the imported waste, including licensed facilities, solid waste landfills, etc. NRC should then determine if the states and compacts of the proposed disposition facilities have agreed to accept the waste.

Under Import License IW017, waste was imported from Canada and processed in Tennessee. A portion of waste, following processing, was manifested as only Tennessee waste and disposed of at the Clive facility in violation of the Northwest Compact's requirements. Import license applications should clearly identify if foreign waste is to be reattributed as domestic wastes following processing. In addition, the NRC did not consult with the State of Utah or the Northwest Compact prior to granting the waste import license, as NRC may have been unaware of the all of the disposition pathways.

There are two additional emerging issues on which the states and compacts are just beginning to be engaged:

- Wastes resulting from the release of a radiological dispersal device.
- Disposal of sealed sources that present a national security risk.

Further dialogue is needed between the federal agencies and states and compacts on these important issues.

**Texas**

The State of Texas is an active member and participant of the LLW Forum. On January 14, 2009, TCEQ Commissioners denied hearing requests and approved an order on Waste Control Specialists LLC (WCS) Radioactive Material License application, No. R04100. The license will be issued after condemnation proceedings are completed and the applicant has acquired the mineral rights on the underlying land at which the site will be located. The Commissioners approved the licensing order by a vote of 2 to 0.

The license allows WCS to operate two separate facilities for the disposal of Class A, B, and C LLRW—one being for the Texas Low-Level Radioactive Waste Disposal Compact, which is comprised of the States of Texas and Vermont, and the other being for federal waste as defined under the Low-Level Radioactive Waste Policy Act of 1980 and its 1985 amendments.

The WCS facility is currently authorized for the processing, storage and disposal of a broad range of hazardous, toxic, and certain types of radioactive waste. WCS is a subsidiary of Valhi, Inc.

Although the LLW Forum is aware of various issues and concerns by Texas officials, I have not included those items in my prepared remarks as Susan Jablonski from the Texas Commission on Environmental Quality will be participating in this NRC briefing and will therefore present the state's viewpoint. The LLW Forum is strongly supportive of Texas' activities toward the licensing and operation of a new LLRW facility and commends the state on its efforts and accomplishments.

*For additional information on WCS license application, please go to the TCEQ web page at http://www.tceq.state.tx.us/permitting/radmat/licensing/wcs_license_app.html or contact the Radioactive Materials Division at (512) 239-6466.*

CORAR

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Henry H. Kramer, Ph.D., FACNP
*Executive Director*

**April 1, 2009**

## SUMMARY OF MAIN ISSUES CONCERNING LLRW

## CURRENT LLRW MANAGEMENT PRACTICES THAT SHOULD BE MAINTAINED

1. NRC and Agreement States regulations and licensing procedures are robust and well tested to provide for safe and secure LLRW storage, transfer, disposal and disposal site monitoring.

2. NRC has the appropriate regulatory framework that addresses both occupational and public protection.

3. NRC and Agreement States should continue to regulate the disposal of LLRW at all disposal sites.

4. LLRW disposal site performance should continue to be based on a 25 mrem/y dose limit and the ALARA principle.

5. The NRC should continue to exempt sealed sources returned to qualified manufacturers from radwaste export/import requirements.

6. LLRW with half-lives greater than 120 days are prohibited from long-termed storage on a generator's site when viable disposal options are available. This is required to optimize the safety and security of LLRW.

7. The NRC Regulatory Issue Summary 2008-12 "Considerations for extending interim storage of LLRW by Fuel Cycle and Materials Licensees, dated 5/09/08, provides practical guidelines for safe and secure temporary storage of LLRW due to lack of access to suitable LLRW Disposal Sites such as restricted access to the Barnwell, S.C. site after June 30, 2008.

8. The tracking of the storage and transfer of Class B and C and GTCC radwaste should be continued. This becomes less burdensome if access for prompt disposal of radwaste is maintained.

9. Access to cost-effective LLRW disposal to the Richland, Washington disposal facility should be continued for generators in the NorthWest and Rocky Mountain Compacts and generators of radwaste from accelerator produced materials.

10. Radwaste disposal needs should not change significantly in the next twenty years.

11. Congress should ensure that the DOE Off-Site Source Recovery program at Los Alamos National Laboratory is continued and adequately funded.

## CURRENT LLRW DISPOSAL ISSUES

1. Barnwell, S.C. disposal site closed access to generators in 36 states. These generators will not be able to dispose Class B and C, GTCC and Class A sealed sources and biological radwaste. Access to the Barnwell site is now restricted to generators in South Carolina, New Jersey and Connecticut.

2. It would be expected to take 5-8 years to establish access to alternative disposal. However, a LLRW disposal in Andrew County Texas received a license on 1/14/08 to accept LLRW for generators in Texas and Vermont. This site is expected to start receiving radwaste in 2010 and may be able to accept radwaste from out-of-compact generators.

3. It is politically difficult to establish new LLRW disposal sites.

4. The cost of LLRW disposal is too high for generators in 36 states due to the following reasons:

    a. Restrictions on disposal options.

    b. Lack of free market competition between accessible disposal sites.

    c. Fees and surcharges above reasonable disposal and disposal site management costs.

    d. Inappropriate classification of radwaste and disposal site classification.

5. Access for cost-effective LLRW disposal is unreliable.

6. Certain mixed wastes are prohibitively expensive to treat and dispose.

7. When generators are forced to store radwaste on site for an unspecified time the following issues may arise:

    a. Storage space may be insufficient, unsuitable or costly to maintain.

    b. Radwaste in storage must be sealed and regularly maintained.

    c. May cause additional radiation exposure.

    d. May require licensee to increase possession limits and require costly enhanced security provisions.

    e. Radwaste may deteriorate in storage, requiring repackaging and incurring additional radiation exposure.

f. The stored radwaste may not be in correct form when disposal access is eventually restored if disposal conditions and requirements have changed. This could require reprocessing, repackaging and incur additional radiation exposure.

8. Class B and C and GTCC radwaste in storage is considered an attractive target for malevolent misuse to cause local public panic.

9. Loss of access for cost effective treatment and disposal has adverse effect on biomedical research and healthcare causing the discontinuation of certain practices.

10. Certain $^{3}H$ and $^{14}C$ labeled research products are no longer available to the research community due to unnecessarily high radwaste costs.

11. The public and legislators are generally unaware of the social benefit of radioactive products that generate radioactive waste during manufacture or use.

## SOLUTIONS TO LLRW DISPOSAL ISSUES

1. Safety and Security of LLRW should be optimized by providing cost-effective, safe, secure alternative access to 2 to 3 disposal sites.

2. The development of alternative disposal access should be started as soon as possible.

3. The NRC should qualify DOE radwaste disposal sites to accept commercial LLRW.

4. The DOE should provide a full range of treatment and disposal options at underutilized or new sites until cost-effective commercial sites are available.

5. The DOE should extend emergency provisions for accepting LLRW including unwanted sealed sources to ensure that all radwaste is not orphaned.

6. The use of temporary storage sites should be avoided unless critically needed to ensure the safety and security of abandoned LLRW.

7. The Clive, Utah and Andrews County, Texas radwaste disposal sites should be licensed to accept all commercial Class A, B and C LLRW.

8. The EPA should work with the NRC to provide access for LLRW disposal at RCRA-Subtitle C and D hazardous waste disposal sites.

9. The NRC should promulgate a 1 mrem/year clearance standard for both unrestricted and restricted release to avoid unnecessary disposal in LLRW disposal sites. The EPA should work with NRC to harmonize a clearance rule.

10. The EPA should assist States to implement the EPA's Conditional Exemption Rule for mixed waste management.

11. To ensure uniform regulations, regulatory agencies with overlapping jurisdictions should defer to the lead agency, which will normally be the NRC.

12. Radwaste generators should be allowed sufficient flexibility in LLRW management and timing of transfer for disposal to ensure safety and security is optimized.

13. GAO should investigate the cost differences between LLRW disposal sites and determine which costs are unnecessary.

14. The NRC should establish a revised LLRW classification system based on the risk and form of the waste rather than its origin.

15. The DOE should revise their LLRW generators classification to better inform the public of the quantity of radwaste associated with biomedical use of radioactive materials.

16. Decommissioning and radwaste management regulations should exempt unwanted sealed sources from being considered as waste in recognition of their resale and recycle value.

17. The appropriate disposal of sealed sources at commercial sites should be enforced rather than allowing sources to be disposed by the DOE.

18. LLRW A,B and C Classifications should be based on actual disposal site conditions to accommodate certain long-lived radiochemicals such as $^{14}C$,$^{99}Tc$ and $^{129}I$.

19. The LLRWPA should be amended to accommodate the above proposed solutions where necessary.

# LOW-LEVEL RADIOACTIVE WASTE FORUM, INC.

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# U.S. NUCLEAR REGULATORY COMMISSION

# BREIFING ON LOW-LEVEL RADIOACTIVE WASTE

# APRIL 17, 2009

**WRITTEN MATERIALS**

**SUBMITTED BY**


**LEONARD C. SLOSKY**

**CHAIR-ELECT OF THE LOW-LEVEL RADIOACTIVE WASTE FORUM, INC.**
**AND**
**EXECUTIVE DIRECTOR OF THE ROCKY MOUNTAIN LOW-LEVEL RADIOACTIVE WASTE BOARD**

**REPRESENTING THE LOW-LEVEL RADIOACTIVE WASTE FORUM, INC.**
**AND**
**THE STATES OF SOUTH CAROLINA, UTAH, AND WASHINGTON**

# ATLANTIC INTERSTATE LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT COMPACT COMMISSION

February 10, 2009


**Connecticut**
**New Jersey**
**South Carolina**

**M. K. Batavia, P.E.**
**Executive Director**
**1201 Main Street**
**Suite 1830**
**Columbia, SC 29201**

**Phone: 803-737-1879**
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The Atlantic Compact was formerly known as the Northeast Compact

Mr. C. Earl Hunter, Commissioner
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

Dear Commissioner Hunter:

On September 26, 2008, Richard Haynes, Director of the Division of Waste Management, expressed concerns to the Atlantic Compact Commission that organizations outside the Atlantic Compact region might move radioactive materials into the region and then attempt somehow to re-manifest the materials as "Atlantic Compact waste" in order to qualify for access to the Barnwell LLRW facility. Mr. Haynes provided a follow-up briefing on this and other matters related to the definition of regional waste at our Commission's most recent meeting on October 23. We are grateful to Mr. Haynes for raising these concerns.

Mr. Haynes cited two primary concerns. First, there is the possibility for movement of non-region waste into member states New Jersey or Connecticut and then its re-manifestation as regional waste in circumstances where SC DHEC does not have a mechanism to determine the true origin of waste from facilities licensed within these other Atlantic Compact states. Second, Mr. Haynes expressed concern that a processing facility might locate within a region state and gain authority from that state to list itself as the "generator" of the treated waste for purposes of disposal at Barnwell, and to then send that waste to Barnwell even though the waste was originally generated outside the Atlantic region.

As you know, waste generated from outside the Atlantic Region may not be shipped to the Barnwell regional facility without the approval of both the Atlantic Compact Commission and the State of South Carolina, as the host state. Both the Commission and South Carolina have declared by force of law that no waste generated outside the region may be sent to Barnwell after July 1, 2008. By his attached letter dated May 12, 2008, Frank Fusco, Director of the South Carolina Budget and Control Board, rejected the prospect of "domestication" by the re-manifestation or re-processing of waste originally generated from outside the region.

Still, DHEC raises practical questions regarding actual policing of the packages sent to Barnwell and the understandable concern that all member states should be on the same page regarding who is considered a "regional generator." We share DHEC's concern that all waste received at the Barnwell disposal facility must be legitimately generated within the Compact region, and is not simply waste from other regions or foreign

nations that was re-manifested or re-processed within one of our three Compact states for the purpose of gaining access to Barnwell.

As to DHEC's first concern, current laws and practices already address the handling of wastes through manifests, and wastes from South Carolina and from the other member states are handled in the same way: in both instances, manifests detailing the original generators are required by law, and in neither instance is it practical physically to open the package and actually verify the origin of the waste by inspection.

Importation of radioactive material from other states or nations for the purpose of re-manifesting it as Atlantic waste for disposal at Barnwell would violate current laws, regulations and policies. There may be legitimate instances where radioactive material entering the Atlantic Compact region – on a case-by-case basis and after careful analysis – is determined to be waste with no actual or residual value. It is clear, however, that routinely importing radioactive material from other states for the purpose of re-manifesting it as Atlantic "waste" would be illegal.

The regulatory practices for tracking waste through brokers, processors and shippers back to the original generator date back to South Carolina laws directing DHEC to require permits of all waste generators. For at least 25 years, waste shippers have been required to provide documentation listing the generators whose waste contributed to the contents of comingled containers. This has included pro-rating the volume and curie content of containers to individual generators even in instances where the chemical form of the waste has been altered by processing techniques. This far-sighted legislation ensured that there would be documentation identifying the original generator of the waste for purposes of liability, even where the waste had been re-processed at another location en route to the Barnwell site.

Of course, under South Carolina law, as of July 1, 2008, it will no longer be appropriate physically to combine region and non-region waste in the same packaging if the regional waste is intended for disposal at Barnwell.

If and to the extent there are enforcement concerns regarding the origin of waste, it seems that these can be addressed by South Carolina through its current enforcement regime. Generators from South Carolina, Connecticut and New Jersey must have a permit from DHEC before sending waste for disposal at Barnwell, and this is so even if the waste is shipped through a processor or broker. In addition, all waste arriving at Barnwell must have a shipping manifest that declares, among other things, the original source and generator of the waste. We presume that DHEC's licensing and certification process already submits all generators to the laws and courts of the State of South Carolina for any violations. My further understanding is that there would be severe penalties in South Carolina if any generator, whether in-state or out-of-state, misrepresents the true origin of waste coming from facilities licensed within any of the Atlantic Compact states.

If not already in place, it seems that a Sarbanes-Oxley type certification from a responsible company official regarding the original source and characteristics of waste sent for disposal in South Carolina would be a useful compliance tool. Because the waste that contributes to co-

mingled waste containers for disposal at Barnwell was itself originally manifested for transport into the waste consolidation or processing facility, there should be a trail of documentation that identifies the original generator of the waste. Like all such systems where physical verification can be difficult, there should be meaningful penalties for abuses of the system.

As to the second concern raised by Mr. Haynes, regarding the re-manifestation of processed waste, we are aware of published reports that the State of Tennessee may have allowed waste processors to exclude information about the original generators, even foreign generators, when the treatment residue from the waste was re-manifested for shipment to other states. While this is a new and novel approach, we urge DHEC to continue the traditional policy of requiring identification of the generators whose waste originally contributed to the packages received for disposal at the Barnwell site. This information is necessary for billing, accounting, and liability purposes, and of course since July 1, 2008 this information is necessary to determine whether the package contains exclusively regional waste and is thus eligible for disposal at Barnwell at all.

If South Carolina cannot be assured of the original waste sources, then it would most certainly reconsider its involvement as host state for the Compact. As the host state, South Carolina reserved the right to withdraw from the Compact and to close the Barnwell facility for any reason, including for conduct that violates the agreement to limit Barnwell to regional waste only after July 1, 2008. Our partner states and regional generators value our continued association, and I do not foresee any issue among us regarding the need to adhere to the host state's requirements regarding non-region waste. New Jersey and Connecticut concur in South Carolina's approach to identifying the original generator of the waste.

DHEC should continue its strict policy of requiring identification of the generators whose waste originally contributed to the packages received for disposal at the Barnwell site. And if DHEC cannot be assured that all waste received at Barnwell was originally generated in-region, and prior to any processing, then the waste should be rejected.

We appreciate the efforts of DHEC's staff to keep us informed and in ensuring responsible accountability for waste received at the Barnwell site.

Sincerely,

Benjamin A. Johnson, Chairman
Atlantic Compact Commission

cc: Atlantic Compact Commissioners
Mr. Frank Fusco
Mr. Richard Haynes
Mr. James Latham

Rec'd 5/19/08 - WB

STATE OF SOUTH CAROLINA

# *State Budget and Control Board*

## OFFICE OF THE EXECUTIVE DIRECTOR



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May 12, 2008

Mr. Benjamin Johnson, Esq.
Chairman
Atlantic Compact Commission
1201 Main Street, Suite 1830
Columbia, South Carolina 29201

Re: Notice Regarding Ban on Importation of Waste for Purposes of Disposal

Dear Mr. Johnson:

By resolution on March 12, 2002, the Atlantic Compact Commission granted South Carolina, as the Compact's host state, limited authority to allow importation of waste into the region for purposes of disposal at the regional disposal facility in Barnwell County through June 30, 2008.

The purpose of this letter is to provide the Compact Commission and other interested parties public notice on behalf of the board that the board, effective July 1, 2008, no longer authorizes importation for purposes of disposal at the Barnwell site. "Importation," for these purposes, means the acceptance at the regional disposal facility of any waste that was generated in any foreign country or any state or territory of the United States other than Connecticut, New Jersey and South Carolina.

> "After January 1, 1986, no person shall deposit at a regional facility waste generated outside the region, and further, no regional facility shall accept waste generated outside the region unless approved by the Commission and the affected host state." Federal Compact Law, P.L. 99-240, Title II, Section 227, Article III(A)(2); also Section 48-46-70, South Carolina Code of Laws.
>
> "'Region' means the entire area of the party states." Compact Law...Article II(m).
>
> "After fiscal year 2008, the board shall not authorize the importation of nonregional waste for purposes of disposal." Section 48-46-40(A)(6)(a), S.C.C.

Waste generated within the Atlantic Compact region that is shipped to facilities outside the Atlantic Compact region for purposes of treatment or processing en route to disposal at Barnwell is considered waste generated within the Atlantic Compact region, as long as the treatment residue is not commingled in the same package with residue generated by organizations outside the Atlantic Compact region. Decontamination residue generated from radioactive materials owned by Atlantic Compact organizations may be considered Atlantic Compact waste, whether or not the decontamination process takes place within the Atlantic Compact region.

Sealed sources or other radioactive materials shipped from outside the Atlantic Compact region to waste brokering facilities or other facilities within the Atlantic Compact region for purposes of packaging or consolidation are not considered wastes generated within the Atlantic Compact region. The Barnwell site may not accept radioactive material or waste that has been transported into the Atlantic Compact region and re-manifested as radioactive waste solely for purposes of establishing eligibility for disposal at the Barnwell site as Atlantic Compact waste.

We believe that these guidelines are consistent with State and Federal laws, longstanding federal practices, and the regulations of the South Carolina Department of Health and Environmental Control (DHEC) at Chapter 61-63, RHA 3.2.98 and RHA 3.55, . If you have any questions regarding this Notice, please do not hesitate to contact Bill Newberry, Manager, Radioactive Waste Disposal Program, at 803-737-8037. If you have any questions regarding DHEC regulations related to identifying and manifesting radioactive waste shipped to the Barnwell facility, please contact Richard Haynes, Director, Division of Waste Management, DHEC, at 803-896-4070.

Sincerely,

Frank W. Fusco

Frank W. Fusco
Executive Director

cc: Bo Aughtry, Chairman, DHEC Board
Daphne Neel, Chief, BLWM, DHEC

STATE OF UTAH

JON M. HUNTSMAN, JR.
GOVERNOR

OFFICE OF THE GOVERNOR
SALT LAKE CITY, UTAH
84114-2220

GARY R. HERBERT
LIEUTENANT GOVERNOR

News Release
April 23, 2008
Contact: Lisa Roskelley
Governor's Spokeswoman
Office (801) 538-1503 Cell (801) 560-0137

# Governor Huntsman Blocks Italian Waste

**Salt Lake City** – Utah Governor Jon Huntsman decided Tuesday to direct Bill Sinclair, who represents Utah on the Northwest Interstate Low-Level Waste Compact, to vote against any proposals for foreign nuclear waste to come in to Utah. The issue is on the Compact's May 8 agenda.

"As I have always emphatically declared, Utah should not be the world's dumping ground," Governor Huntsman said. "Our country has limited space to store even domestic waste and it would be most appropriate to have a federal policy against the importation of foreign nuclear waste. However, as the federal government is slow to adopt such a policy, Utah will lead the way."

The U.S. Nuclear Regulatory Commission has the authority to approve or disapprove the transport of foreign nuclear waste into the United States. Once allowed by the NRC, the Northwest Compact has the authority to approve or disapprove foreign nuclear waste for facilities in this region. The state impacted by the waste application has the ability to veto importation of foreign waste.

###

**Northwest Interstate Compact**
On Low-Level Radioactive Waste Management
P.O. Box 47600. Olympia, Washington 98504-7600. (360) 407-7102. Mike Garner, Executive Director

# RESOLUTION CLARIFYING THE THIRD AMENDED RESOLUTION AND ORDER

Whereas, the Compact Committee continues to support the Low-Level Radioactive Waste Policy Amendments Act, Public Law 99-240;

Whereas, no facility located in any party state may accept low-level radioactive waste generated outside the region comprised of the party states, prior to an arrangement being adopted by the Compact Committee in accordance with Articles IV and V of the Compact statute;

Whereas, the Compact Committee most recently approved on May 1, 2006, the Third Amended Resolution and Order that serves as an arrangement that provides certain access to the region to low-level radioactive wastes generated in unaffiliated states and compacts that meet the requirements of the Third Amended Resolution and Order for disposal at the EnergySolutions facility in Clive, Utah;

Whereas, the Third Amended Resolution and Order does not address foreign low-level radioactive wastes and the Compact Committee has never considered or reviewed the issue of adopting an arrangement that would provide low-level radioactive wastes generated in foreign countries access to the region for disposal at the EnergySolutions facility in Clive, Utah;

BE IT HEREBY RESOLVED AND ORDERED THAT:

The Third Amended Resolution and Order does not serve as an arrangement for disposal of low-level radioactive wastes generated in foreign countries – including foreign-generated waste that is characterized as domestic generated waste by another compact or unaffiliated state, and such an arrangement, as required by Articles IV and V of the Compact statutes, would need to be adopted by the Compact Committee prior to foreign-generated low-level radioactive wastes being provided access to the region for disposal at EnergySolutions facility in Clive, Utah.

As approved by the Northwest Interstate Compact on Low-Level Radioactive Waste Management, I execute this Resolution on the 12th day of May 2008.

Lawrence Goldstein, Chair
Northwest Interstate Compact on
Low-Level Radioactive Waste Management

**Northwest Interstate Compact**
On Low-Level Radioactive Waste Management
P.O. Box 47600. Olympia, Washington 98504-7600. (360) 407-7102. Mike Garner, Executive Director

June 11, 2008

Ms. Kathryn Haynes, Executive Director
Southeast Interstate Compact
21 Glenwood Avenue, Suite 207
Raleigh, NC 27603

Dear Ms. Haynes:

I am writing on behalf of the working group formed by the Northwest Compact committee at its May 8, 2008, meeting. We are tasked with attempting to resolve concerns our committee has with the practice that allows certain Southeast Compact processors to claim another generator's waste, following processing only, as their own waste. This practice compromises the ability of the Northwest Compact to effectively exercise its exclusionary authority as provided by federal law.

The Northwest Compact's Third Amended Resolution and Order (Resolution) (attached) serves as an arrangement as required by Articles IV and V of our compact statutes with out-of-region unaffiliated states and compacts. The Resolution provides access to the region for disposal of certain low-level wastes at the EnergySolutions' facility in Clive, Utah. At the end of March 2008 the Northwest Compact became aware that waste not intended to be provided access to our region under the requirements of the Resolution was being shipped to EnergySolutions' facility for disposal. The waste in question was imported from Monserco Limited located in Ontario, Canada to the Duratek, Inc. facility located in Tennessee. The U.S. Nuclear Regulatory Commission solicited comments from the Southeast Compact and the state of Tennessee, but not the Northwest Compact, on this import application (IW017).

Duratek incinerated a portion of the Canadian waste. As a result of a change to its operating license that took effect approximately two years ago, Duratek claimed the ash resulting from the incineration of waste generated in Canada as its own waste. The ash resulting from incineration of the Canadian waste was then shipped as Duratek (Tennessee) waste to EnergySolutions' Utah facility for disposal.

The Northwest Compact wants to make it clear the Resolution does not serve as an arrangement for foreign low-level waste. At its May 8, 2008, meeting the committee adopted a Clarifying Resolution (attached) specifying that an arrangement does not exist for foreign waste, including foreign generated waste that is characterized as domestic generated waste by an out-of-region state or compact. Therefore, Canadian waste incinerated at the Duratek facility and then claimed as Duratek waste is not provided access to our region for disposal at EnergySolutions' Utah facility.

The practice of allowing Duratek and other facilities to characterize other generator's waste as their own waste following processing appears to be contrary to the intent of the Low-Level Radioactive Policy Amendments Act of 1985. The Low-Level Waste Handbook – A User's Guide to the Low-Level Radioactive Waste Policy Amendments Act of 1985 addresses the term "generate" on pages three and four (attached).
On page three it states:

> ... "For example, low-level radioactive waste that is processed for volume reduction or other purposes would not after such processing be considered to have been newly generated by that process."...

On page four it states:

> ..."However, in the case of intermediate wastes, the wastes so processed or handled would be considered the primary product – not a byproduct – of the activity, and therefore, these activities would generate low-level radioactive wastes only to the extent that certain equipment uses (sic) in the activity became contaminated as a result of contact with the low-level radioactive waste being processed."...

This practice appears to be inconsistent with the definition of "generator" found within the statutes of the Northwest Compact.

> "Generator" means any person, partnership, association, corporation, or any other entity whatsoever which, as a part of its activities, produces low-level radioactive waste. (attached)

The Northwest Compact has concerns with the practice that allows a processor, following processing only, to claim another generator's waste as its own waste. It compromises our ability to effectively exercise our exclusionary authority as we are unable to identify where the waste was originally generated. This applies to both foreign and domestic low-level wastes. The working group would like to work with representatives of the Southeast Compact to resolve this issue. I will be calling you the week of June 9, 2008, and explore options for initiating a dialogue on this issue.

Should you have any questions please call me at (360) 407-7102.

Sincerely,

Mike Garner, Executive Director
Northwest Interstate Compact

cc: Northwest Compact Committee
Attachments

# Nuclear Energy Industry Approach on Low-Level Radioactive Waste Management

Mike Blevins

Luminant Power

NEI

# Industry White Paper

- Purpose is to guide industry actions to proactively address low-level radioactive waste (LLRW) management issues
- Facilitates an integrated approach involving the industry organizations (NEI, EPRI and INPO)
- Issued in December 2008 –will be updated annually or as needed

# Goal and Objectives

- Goal
  - Provide safe, cost-effective and reliable means for LLRW management
- Objectives
  1. Implement safe, secure and cost-effective interim storage
  2. Optimize LLRW generation and processing to facilitate disposal
  3. Establish reliable disposal options with predictable costs

# Principles

1. Storage and disposal have been and will continue to be managed safely
2. Timely disposal is preferable to storage
3. Regulation should not restrict safe LLRW management options
4. States and LLRW compacts are key to enabling safe LLRW management options
5. An open and competitive market best facilitates development of innovative and cost-effective options

# Near-Term Industry Actions

- Implement safe and secure interim storage of Class B and C LLRW
- Implement operational measures to optimize LLRW generation –considering disposal & storage options
- Promote enhanced flexibility in regulatory LLRW management criteria & guidance

# Longer-Term Industry Actions

- Engage waste compacts, states and federal agencies in developing and implementing an integrated national strategy for safe, effective and reliable low-level waste management
- Propose changes to NRC regulation
- Consider possible legislative action

# Enhancing the Regulatory Framework

- Near-term (2009-2011):
  - Branch Technical Positions
    - Criteria for blending similar waste forms
    - Waste concentration averaging and waste classification
  - Alternative classification criteria w/in existing regulation (10 CFR 61.58)
- Longer-Term (2012 and beyond):
  - Rulemaking (10 CFR 61)

# List of Acronyms

- EPRI (Electric Power Research Institute)
- INPO (Institute of Nuclear Power Operations)
- NEI (Nuclear Energy Institute)
- NRC (Nuclear Regulatory Commission)

# Disposal of Sealed Sources

## April 17, 2009


**Michael J. Zittle**

**Assistant Radiation Safety Officer,**
**Oregon State University,**

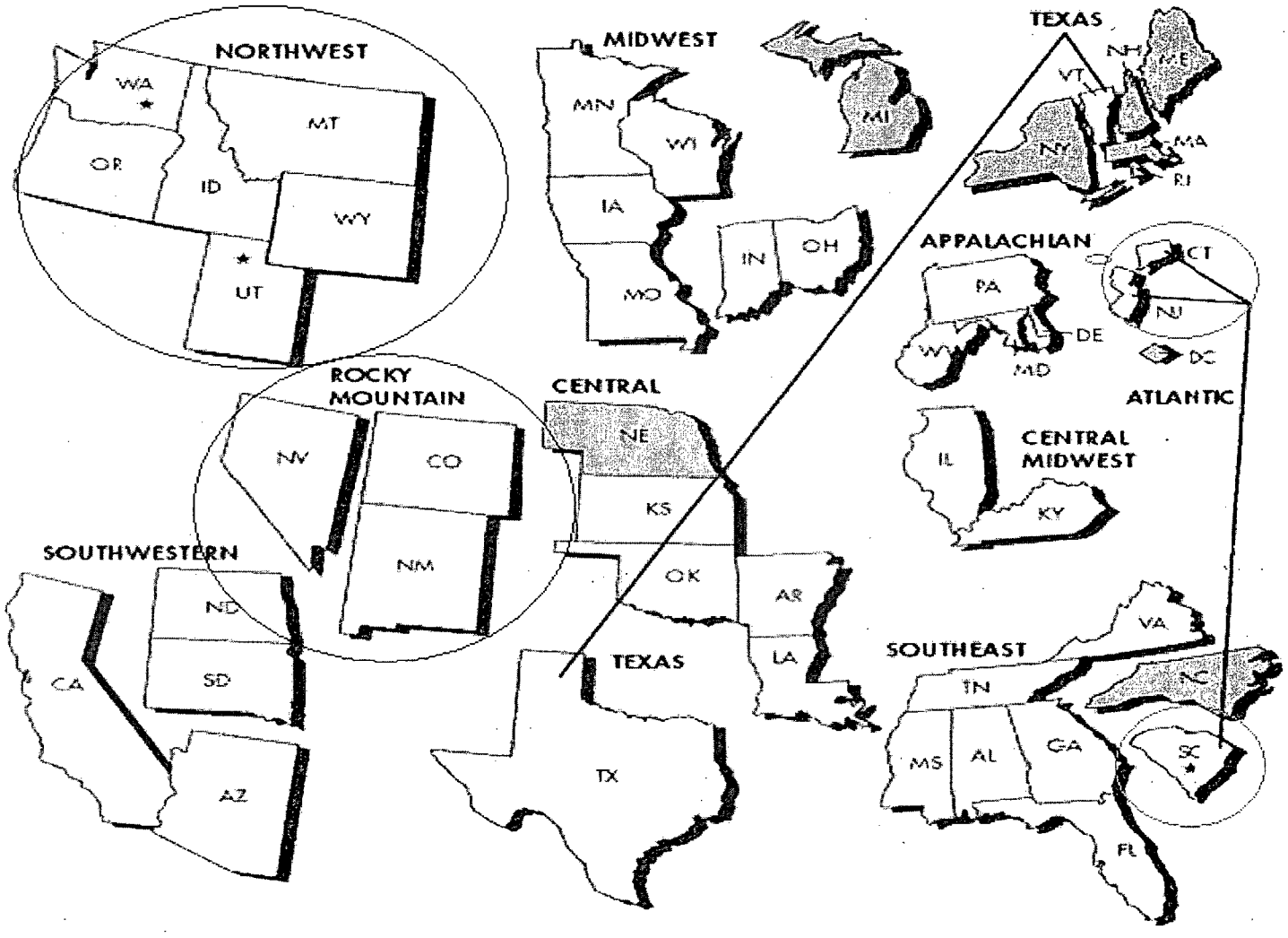
**Campus Radiation Safety Officers**
**(CRSO) Representative**

# Sealed Source Generators

- Oregon State University (OSU)
- CRSO
  - United States and Canada
- AMRSO
  - Private listserve spanning 4 continents
- Unaffiliated Hospitals and Colleges

# LLRW Disposal Sites

# LLRW Compacts




★ Active Disposal Site (3)
□ Approved Compact (10)
▨ Unaffiliated (10)

Note: Data as of January 2007.
Alaska and Hawaii belong to the Northwest Compact. Puerto Rico is unaffiliated.
Source: Nuclear Regulatory Commission

# Current Sealed Source Disposal Options

1. Class A, B, & C disposal capacity for the "Fortunate 14"
   - US Ecology - Richland, WA
     - Northwest and Rocky Mountain Compacts ONLY
   - Energy Solutions - Barnwell, SC
     - Atlantic Compact ONLY
2. Recycle sources to vendor
3. Recycle to another licensee
4. Store sources for future disposal

# Government Sponsored Sealed Source Disposal Options

- **SCATR – Source Collection and Threat Reduction Program**
  - **Funded by NNSA**
  - **Administered by CRCPD**
  - **Provides financial assistance to properly secure and dispose**
    - **Medical brachytherapy sources - $^{226}Ra$ & $^{137}Cs$**
    - **Eye Applicators – $^{90}Sr$**
    - **Calibration Sources – $^{137}Cs$, $^{60}Co$, etc.**

# Government Sponsored Sealed Source Disposal Options

- **OSRP – Off-Site Source Recovery Program**
  - **Funded by NNSA**
    - **Mission "to remove excess, unwanted, abandoned, or orphan radioactive sealed sources that pose a potential risk to health, safety, and national security"**
    - **Transuranics – $^{239}$Np, $^{239}$Pu, $^{241}$Am, etc.**
    - **Other beta/gamma sources - $^{137}$Cs, $^{60}$Co**

# Generator Concerns

- Lack of disposal capacity for sealed sources for 36 States
- Prohibitively high disposal costs
- Lack of free market competition
- Onsite storage challenges
  - Inventory
  - Security
  - Exposure
  - Proper Disposal

# SCATR Concerns

- **Confusion about responsibilities**
  - States refers generators to CRCPD
  - CRCPD indicates that States should initiate the process
- **Is funding still available?**
- **What is the status of SCATR?**
  - State of Oregon had some movement
  - Inquired about designating OSU as Host Institution
    - Space, security, and personnel are concerns

# SCATR Concerns

- **Northwest Compact**
  - 757 sources on recovery list
- **Rocky Mt Compacts**
  - 266 sources on recovery list
- **US Ecology operates regional disposal facility for two Compacts**
  - What about thousands of "Out of Compact" sources?
- **CRCPD and States need to coordinate efforts for pickup and consolidation of sources**

# OSRP Concerns

- **Lag time after registration of sources**
  - **1 year until acknowledgement**
  - **2-3 years until source collection**
- **Clunky registration process**
  - **Excel form is difficult to work with**
  - **Erroneous confirmation inventory**
    - **OSU confirmation inventory contained (only) 5 of 29 registered sources**
    - **Unusable spreadsheet**

# Future Disposal Options

- **Amend the LLRWPA**
  - **To adapt to changing LLRW framework**
- **Repeal the LLRWPA**
  - **To create competition and decrease cost of disposal**
- **Utilize DOE disposal facilities for commercial generators who lack disposal options**

# More Future Disposal Options

- Develop one or two disposal facilities on Federal land
- Modify DOE's disposal for GTCC waste to include Class B and C
- All options may require Congressional authorization

# Conclusion

- The cost of disposal continues to rise but most of our budgets are getting smaller
- Hopefully more disposal options will be available to generators in the future
- Let's be Smart!
  - Stumbling blocks should not prevent mission
- Let's work together and get it done!

# Acronyms

- **CRSO - Campus Radiation Safety Officers**
- **AMRSO - Academic and Medical Radiation Safety Officers**
- **NNSA - National Nuclear Security Administration**
- **CRCPD - Conference of Radiation Control Program Directors**
- **SCATR – Source Collection and Threat Reduction Program**
- **OSRP – Off-Site Source Recovery Program**
- **LLRWPA - Low-Level Radioactive Waste Policy Act (as amended)**
- **GTCC - Greater-than-Class-C**

# LLW & Security

**April 17, 2009**

**Roy W. Brown**

**Senior Director, Federal Affairs**
**Council On Radionuclides And Radiopharmaceuticals**

CORAR

# Background on CORAR

- CORAR is the Trade Association for the manufacturers and distributors of radionuclides & radiopharmaceuticals
- Members utilize radionuclides to produce the radiopharmaceuticals for medical diagnosis and therapy & radionuclides for life science research

**Alseres Pharmaceutical Molecular Imaging • Bracco Diagnostics, Inc. • Cell Therapeutics, Inc. • Cardinal Health, Cellectar, LLC • Covidien • DRAXIMAGE • Eckert & Ziegler Isotope Products • EUSA Pharma • GE Healthcare • GlaxoSmithKline • International Isotopes Inc. • Lantheus Medical Imaging • MDS Nordion • Nuclitec • Molecular Insight Pharmaceuticals, Inc. • PerkinElmer Life & Analytical Sciences, Inc. • PETNET Solutions, Inc./Siemens • QSA Global, Inc.**

CORAR

# General Comments on LLRW

- The use of radioactive material in nuclear medicine & biomedical research needs cost effective disposal of LLRW
- Key $^{3}H$ and $^{14}C$ labeled research products are no longer available due to high radwaste disposal costs
- The Barnwell site is closed to generators in 36 states, making disposal of Class B, C and GTCC impossible
- The majority of our Class A waste is currently sent to Energy*Solutions*

CORAR

# LLRW Practices That Are Working & Should Continue

- NRC & Agreement States should continue to regulate disposal of LLRW at all disposal sites
- NRC & Agreement State regs and licensing provide for safe & secure LLRW storage, transfer, disposal & disposal monitoring
- LLRW disposal site performance should continue to be based on 25 mrem/yr and the ALARA principle

CRAR

# LLRW Practices That Are Working & Should Continue

- NRC-RIS 2008-12 provides practical guidelines for temporary storage
- Access to Richland site by NW and Rocky Mtn Compacts & accelerator waste should continue
- NRC should encourage Congress to continue LANL's Off-Site Source Recovery program and expand to collect smaller sources which are a potential security risk

CRAR

# LLRW Practices That Are Working & Should Continue

- Continue to promote the management of disused sealed sources for their recycle/reuse to minimize waste and enhance security
- Focus Group formed by GCC/SCC on Recovery & Disposition Options for disused sealed sources

CRAR

# LLRW & Security Concerns

- **Cost of LLRW disposal is too high in 36 states due to lack of options, no free market competition, high fees & surcharges**
- **On-site storage of LLRW is costly – requiring regular management, additional exposure, possible license amendments & enhanced security**
- **Storing Class B, C & GTCC waste on-site is considered attractive target for malevolent use**

CORAR

# CORAR Suggestions to NRC

- **Industry needs access to 2-3 sites**
- **NRC should qualify DOE sites to accept commercial LLRW**
- **NRC should work with DOE to provide treatment & disposal options until cost effective commercial sites are established**
- **NRC should work with EPA to provide LLRW disposal access to RCRA-Subtitle C and D hazardous waste disposal sites**

CORAR

# CORAR Suggestions to NRC

- **NRC should promulgate 1 mrem/yr clearance standard for restricted and unrestricted release to avoid unnecessary use of LLRW disposal sites**
- **NRC should consider revising the LLRW classification system based on form rather than origin**

CORAR

# Acronyms

**CORAR - Council on Radionuclides & Radiopharmaceuticals**

**LLRW – Low Level Radioactive Waste**

**ALARA – As Low as is Reasonably Achievable**

**GTCC – Greater Than Class C waste**

**LANL – Los Alamos National Lab**

**NRC RIS 2008-12 - "Considerations for Extending Interim Storage of LLRW by Fuel Cycle and Materials Licensees"**

**GCC/SCC – Government Coordinating Council/Sector Coordinating Council**

CORAR

# Public Concerns about "Low-Level" Radioactive Waste

## April 17, 2009

## NRC Commissioners' Briefing


## Diane D'Arrigo

### Radioactive Waste Project Director

## Nuclear Information and Resource Service

# GOALS for "Low-Level" Radioactive Waste Management and Disposal

- Isolation from Public and Environment
- Preventing Exposures/Doses
- Minimize production, transport, handling

# Concerns re:10 CFR 61

- **Not protective enough now**
  - **Long–lasting waste can be buried**
  - **100 year institutional control period is shorter than waste remains radioactively hazardous**
  - **Allowable leak rate**
- **Proposed changes being considered could be even LESS protective**

**"Risk informing" is seen as a threat to public and environment when NRC continues to deny radiation health risks.**

# Definition of "Low-Level" Radioactive Waste in the US

- **10 CFR 61.55 designates Classes A, B, C and Greater-Than-Class-C (GTCC) based on reactor radionuclide concentrations. Anything not listed is automatically Class A—which includes long-lasting radionuclides.**

**Concerns include**

- **Disagreement with NRC assumption that Classes A, B and C are only hazardous for 100, 300 and 500 years**
- **Opposition to creation of a new class of Very Low Level Waste or Below Class A or other de-minimis category (the old BRC)**
- **Classification of Depleted Uranium as Class A**

# Texas Waste Site

Texas legislators have requested investigations into

- TCEQ's handling of concerns that caused several TCEQ technical staff reviewing the WCS license application to quit
- TCEQ Commissioners' decision to deny the requested contested case hearing

Local public has concerns regarding WCS paying for an upcoming election on a $75 million bond to pay for the site, which is owned by a billionaire

Lack of clarity on authorized time allowed for radioactive waste storage at the WCS site

# IMPORT/EXPORT

- **Public disclosure is completely inadequate**
- **Public opposes import of foreign radioactive waste for processing and/or disposal and/or "recycling." Support federal legislation.**
- **Tennessee, South Carolina, Louisiana, Southeast and National organizations requested public adjudicatory hearing in middle TN on EnergySolutions' proposed import of Italy's waste**
- **Utah and Northwest Compact oppose Italy import**

# Serious Concern re: Private Processors Taking Title to Nuclear Waste

**Tennesseans are just learning about the:**

**Secret changes their Agreement State agency, TN Department of Environment and Conservation, has made allowing private processors to take title and liability to nuclear waste from across the country and around the world;**

**Contracts to bring Class B and C reactor waste to Tennessee where Studsvik takes title to it and becomes the "generator"**

**Experiments diluting or down-blending higher concentration waste so it can meet acceptance limits at EnergySolutions' waste site in UT**

# ONSITE STORAGE

**No public records are available of LLRW generated or stored onsite at nuclear power reactor sites.**

**Minimal public input has been sought or taken on site specific and national policy decisions on onsite llrw storage. Waste generators drive the discussion.**

**In absence of licensed disposal, sites of reactors (and processors that take waste title and ownership) could become de-facto permanent nuclear waste sites. This must be considered in license extension and new license decisions.**

# Deregulating Nuclear Waste is UNACCEPTABLE

- Reclassifying nuclear waste as not radioactive, very low level, BSFR or other term is a set up to let it out of regulatory control.
- Solid and Hazardous waste sites are not designed to isolate long-lasting nuclear waste. Liners have a 30-year design life. It is unacceptable to send nuclear power and weapons waste, even if dubbed very low level, to sites not regulated or controlled for man-made radioactivity.
- Synergistic effects are not included in any radiation protection standards. Burial near hazardous wastes could result in exposures to multiple biological stressors.
- Neither restricted nor unrestricted release of radioactive waste for "recycling" is protective enough for the public, recycling workers or environment.

**Thank you for including our perspective in today's briefing.**

**Diane D'Arrigo**
**Nuclear Information and Resource Service**
**301-270-6477**
**www.nirs.org**
**dianed@nirs.org**

WASTE CONTROL
SPECIALISTS LLC

April 6, 2009 VIA CERTIFIED MAIL

Dale Klein, Chairman
Gregory Jaczko, Peter Lyons, Kristine Svinicki, Commissioners
c/o Ms. Annette Vietti-Cook
Secretary of the Commission
United States Nuclear Regulatory Commission
One White Flint North, Mailstop 16 C1
11555 Rockville Pike
Rockville, Maryland 20852-2738

**Subject: Information for Consideration by the Commission at Scheduled 4/17/09 Briefing on Low-Level Radioactive Waste**

Dear Commissioners Klein, Jaczko, Lyons and Svinicki:

Waste Control Specialists LLC (WCS) is pleased to submit the following information for consideration by the Commission at the upcoming Briefing on Low-Level Radioactive Waste (LLRW), scheduled to be conducted on April 17, 2009. It was our hope to provide this information in person at this briefing. Please keep us in mind for any future opportunities for industry to comment on radioactive material storage, processing, and disposal.

WCS is rapidly becoming the nation's most capable provider of safe storage, processing, and disposal services for our most troublesome waste streams. In addition to authorizations under the Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA) for hazardous and toxic wastes, the State of Texas also recently licensed WCS to receive and dispose of "11.e.(2)" byproduct material, and approved an Order authorizing WCS—pending closure of certain, limited mineral interest ownership issues—to receive and dispose of Class A, Class B, and Class C LLRW.

Construction of the byproduct material disposal facility is well underway. LLRW will be disposed of in the Compact Waste Facility (CWF), for commercial waste generated in the Texas Compact, or in the Federal Waste Facility (FWF), for waste that is the responsibility of the federal government. The FWF will in turn comprise two units—the Federal Containerized Disposal Unit and the Federal Non-Containerized Disposal Unit. Note that the FWF has also been permitted for hazardous (RCRA) waste disposal, and will be the only disposal destination in the country for Mixed LLRW once the Nevada Test Site is closed to this type of waste next year. WCS will also be seeking a TSCA authorization for the FWF, which will allow disposal of radioactively contaminated polychlorinated biphenyls (PCBs) and radioactively contaminated asbestos.

Once all these facilities are constructed, no other site in the country will have comparable authorizations.

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Andrews, TX 79714
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Fx. 575.394.3427

Our view is that we are serving a vital national interest in fostering and facilitating the full beneficent potential of the nuclear sciences. This potential extends from medical research,

diagnosis, and treatment, which have reduced human suffering and increased life spans, to nuclear energy production, which has already offset billions of tons of air pollution and greenhouse gas emissions (all of which would have been introduced into the environment), and holds the promise eventually to virtually secure America's economic, national, and homeland security.

We would like to offer comments in three areas, as follows:

**Depleted Uranium**

WCS has some concerns related to the recent Commission decision to proceed with a rulemaking to keep high concentration depleted uranium (DU) classified as Class A and require site-specific analysis and approvals. Due to the uncertainty caused by this decision, WCS is currently prohibited by our (conditional) LLRW disposal license from accepting waste streams containing greater than 10 nanocuries per gram of DU even though we performed an assessment in our license application for about 10,000 cubic meters of deconversion waste assumed to be disposed of in the Federal Containerized Disposal Unit.

If it is assumed that the hazard from this waste must be addressed for a very long time (>50,000 years), a conservative intruder risk assessment, similar to that performed in support of the classification system in Title 10 of the U.S. Code of Federal Regulations, Part 61 (10 CFR Part 61), would probably show that the impact would be similar to that for long-lived transuranic waste. The rulemaking must address this issue, such as by requiring additional measures to address the intruder issue. It should be noted that the WCS design would provide three independent intruder barriers—disposal at least 10 meters deep, a shotcrete concrete liner on the disposal cell, and disposal in stable reinforced concrete disposal containers.

It is noted that the Nuclear Regulatory Commission (NRC) staff analysis was performed out to one million years. This is a much longer performance assessment period than is typically performed for shallow land disposal facilities, with the possible exception of identifying potential peak doses for long-lived mobile radionuclides to establish inventory limits. For these long time periods design features such as cover thickness become very uncertain due to the potential for erosion caused by climate changes. This period of performance issue must be addressed in the rule to provide consistency as to how it is addressed in the site-specific analyses that will be required by state regulators.

The rulemaking process will result in an extended time until a solution can be implemented. If the NRC rulemaking requires two years, and the states have up to three years to adopt a compatible rule, and a license amendment is required (which is likely), the process for implementation could take six years. This rule must require strict compatibility for Agreement States to ensure uniform implementation. This potential delay and its effect on the potential generators must be taken into consideration.

**Dilution for Purposes of Waste Classification Changes**

The NRC is considering reversing its 1995 Branch Technical Position and allowing waste generators to intentionally mix or dilute Class B/C LLRW for the sole purpose of reclassifying and disposing of such waste as Class A LLRW. Consideration of such changes to NRC's longstanding policy is driven by the closure last year of ChemNuclear Systems' disposal facility in Barnwell, South Carolina, to waste generators in 36 states that do not belong to the Atlantic Compact. The NRC should carefully weigh any decision to reverse existing policy that currently prohibits diluting for the sole purpose of changing waste classification, as defined in 10 CFR §61.55, since such changes would significantly impact waste management programs of other federal agencies, Agreement States, Regional Compacts, and other important stakeholders.

The existing NRC policy that prohibits dilution of LLRW for the sole purpose of changing its classification has been addressed in past rulemakings, regulatory guidance, and correspondence between the NRC and its licensees. In a recent proposed rulemaking,[1] NRC stated that dilution of licensed materials to concentrations less than 0.05 weight percent of source materials should not be allowed, without prior authorization, for the purpose of exempting such materials from further regulation under 10 CFR Part 40. In response to public comments, NRC considered defining "dilution" to distinguish between *intentional dilution* for the purpose of circumventing regulatory requirements and *inadvertent* or *natural dilution* that occurs when clean soil is unavoidably mixed with and thereby reduces the concentrations of licensed material during site decommissioning activities.

The NRC also addressed[2] dilution or intentional mixing of clean soil with licensed materials to provide flexibility to licensees' efforts at complying with the License Termination Rule (LTR). The NRC reiterated and "approved use of intentional mixing of homogenous waste streams for meeting the waste acceptance criteria of an offsite disposal facility, *as long as the classification of the waste as defined by requirements of 10 CFR 61.55, is not altered*" (emphasis added). NRC staff also conducted a regulatory analysis comparing the use of intentional mixing of contaminated soil with the policies of other federal agencies, and other regulatory and advisory bodies, including those of the international community. The results[3] of this analysis revealed that the use of intentional mixing for the purpose of changing waste classification was counter to the policy of the U.S. Department of Energy, prohibited by the U.S. Environmental Protection Agency, advised against by the Conference of Radiation Control Program Directors unless specifically approved by a state agency, and advised against in the international community if for the purpose of circumventing regulatory requirements.

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[1] Proposed Rule, *Transfers of Certain Source Materials by Specific Licensees*, 67 Federal Register 167, pp. 55175 – 55179, dated August 28, 2002. The final rule was never promulgated.

[2] *Consolidated Decommissioning Guidance*, NUREG-1757, Volume 1, Revision 2, Section 15.13.1. During deliberations of the policy, Commissioner Merrifield opined that dilution of waste for the sole purpose of altering waste classification was unacceptable (see SECY-04-0035).

[3] See SECY-04-0035, Table 2.1, *Results of the License Termination Rule Analysis*, dated March 1, 2004.

In considering reversal of the existing policy, NRC should carefully weigh views from the States of Texas and Utah. Intentional dilution of waste for the purpose of changing waste classification is specifically prohibited[4] in Texas. Furthermore, waste that is intentionally diluted as a result of stabilization, mixing, or treatment or for any other reason is subject to the disposal regulations it would have been subject to prior to dilution.

The State of Texas has recently made great strides in demonstrating that new disposal facilities can be licensed and available to help solve the nation's challenges of disposing of Class B/C LLRW. As discussed above, the Commissioners of the Texas Commission on Environmental Quality (TCEQ) recently issued an Order authorizing a license for WCS to dispose of Class A, B, and C LLRW. The TCEQ Commissioners based their decision not only on the suitability of the WCS site but also on the tremendous support by the regional and local community for hosting a site designed to safely dispose of Class A, B, and C LLRW.

If NRC elects to change the existing policy, the Commission should clearly articulate the scope of such changes to existing policy as a means to foster openness, transparency and public confidence in the decision-making process. The NRC should specifically address why changes to the dilution policy would be an acceptable remedy to the difficulties associated with disposal of Class B and Class C LLRW while excluding other types of waste, such as "Greater Than Class C" LLRW, that pose similar if not greater regulatory challenges.

**The Texas Compact Commission and Importation into the Texas Compact**

Members have been named[5] to the Texas Low-Level Radioactive Waste Disposal Compact Commission and the Compact Commission has begun to conduct regular meetings. Of national importance is the authority vested in the Compact Commission by the Texas State Legislature to allow importation of LLRW into the Texas Compact by any person, state, regional body, or group of states.[6] In fact, out-of-Compact attendees at the very first, inaugural meeting of the Compact Commission asked how soon the process could be initiated. Although appropriate rules have yet to be established, the organic statute for the Compact Commission provides that any importation agreement must receive a majority vote of the commission, and that the commission "may adopt such conditions and restrictions in the agreement as it deems advisable."

WCS fully supports the importation of Class A, B, and C LLRW into the Texas Compact. We believe flexible import provisions would go very far toward resolving the nation's challenges with disposal of Class B and Class C LLRW, now that the Barnwell facility no longer allows nationwide access for disposal of these wastes, and toward assuring that these more problematic wastes are safely and securely isolated from the human environment.

WCS requests that a copy of all correspondence regarding this matter be directly faxed (717-540-5102) or emailed (wdornsife@verizon.net) to my attention as soon as possible after

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[4] See Title 30, Texas Administrative Code, Chapter 336.229, *Prohibition of Dilution.*
[5] See <http://governor.state.tx.us/news/appointment/11655>.
[6] See Texas Health and Safety Code, Section 403.006, Article 3.05(6).

issuance. If you have any questions or need additional information please call me at 717-540-5220.

Sincerely,

William P Dornsife

William P. Dornsife, P.E.
Executive VP, Licensing and Regulatory Affairs

cc: Ms. Rochelle Bavol, NRC
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