

The National Mining Association's White Paper Regarding the *Direct Disposal of Non-11e.(2) Materials at Licensed 11e.(2) Disposal Facilities*

Prepared for National Mining Association/Nuclear Regulatory
Commission Conference (Denver, Colorado)

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Introduction

- Commission Strategic Re-Baselining Initiative (SARI):
 - There are large quantities of uranium and thorium-contaminated waste with characteristics *similar* to those of mill tailings, it may be cost-effective to dispose of such waste at existing mill tailings sites



NMA/FCFF Response

- Joint NMA/FCFF White Paper on *Direct Disposal of Non-11e.(2) Materials*
- Submitted to NRC In May, 2004
- Copies Submitted to Environmental Protection Agency (EPA) and Department of Energy (DOE) for Review



Non-11e.(2) White Paper Approach

- **NMA/FCFF White Paper Discusses:**
 - History of Low Level Radioactive Waste (LLRW) Disposal
 - Low Level Waste Policy Act & Amendments
 - Regulatory Programs
 - Regional Compacts
 - UMTRCA (Part 40)
 - 10 CFR Part 61
 - Nuclear Regulatory Commission Guidance
 - Pre-1995 Guidance
 - 1995 Guidance
 - NMA 1998 White Paper
 - Recent Developments



Non-11e.(2) White Paper Approach

- **NMA/FCFF White Paper Discusses:**
 - **NRC/EPA Generic Uranium Milling Assessments**
 - NRC Generic Environmental Impact Statement (GEIS)
 - EPA Final Environmental Impact Statement (FEIS)
 - **Potential Site-Specific Issues**
 - Groundwater
 - Transportation
 - Stockpiling
 - Performance-Based License Conditions
 - **Candidate Materials for *Direct Disposal***



Non-11e.(2) White Paper Topics

- History of LLRW Disposal

- Low Level Waste Policy Act & Amendments

- Facilitate Development of Regional Compact Disposal Sites
 - Failed to Develop Any Disposal Sites

- 10 CFR Part 61

- Definitions of LLRW



Non-11e.(2) White Paper Topics

- Regulatory Programs:

- Regional Compacts (LLRW)

- LLRW Disposal Facilities for “In-State” Waste
 - Utilize Existing Facilities and New Sites

- 10 CFR Part 61 (LLRW)

- 100 Year Active Maintenance (Institutional Controls)
 - 500 Year Class “C”

- UMTRCA (11e.(2) Byproduct Material)

- Passive Controls
 - 200-1,000 Year Closure Period



Non-11e.(2) White Paper Topics

- **NRC Regulatory Guidance**

- **Pre-1995 Guidance**

- Response to Licensee Requests for Direct Disposal
 - Requests Include Wide Range of Materials

- Wastes From De-Watering Underground Mines
 - Side-Stream or Secondary Process Wastes
 - Formerly Utilized Site Remedial Action Plan (FUSRAP) Wastes
 - NORM or TENORM



Non-11e.(2) White Paper Topics

- **NRC Regulatory Guidance**

- 1995 Direct Disposal Guidance Includes Numerous Requirements Such As:

- Licensing Under Part 40
- NO RCRA or EPA-Regulated Waste
- Special Nuclear and 11e.(1) Byproduct Material Only With Compelling Reasons
- Concurrence from DOE and/or Resident State



Non-11e.(2) White Paper Topics

- **NRC Generic Uranium Milling Site Assessment (GEIS):**
 - Evaluates Various Factors at Uranium Milling (11e.(2) Disposal) Sites:
 - Radionuclide Concentrations
 - Design Criteria
 - Surface Stabilization
 - Groundwater
 - Other Potential Environmental Impacts



Non-11e.(2) White Paper Topics

- **EPA Generic Uranium Milling Site Assessment (FEIS):**
 - Evaluates Factors Similar to Those in The NRC GEIS
 - Provides Technical Bases for UMTRCA-Mandated EPA Generally Applicable Standards for 11e.(2) Facilities



Non-11e.(2) White Paper Topics

- Potential Site-Specific Issues:
 - Groundwater Impacts
 - Site-Specific Geologic and Hydrogeologic Assessment
 - Transportation
 - Transport Containers
 - Occupational Exposure
 - Stockpiling
 - Windblown Constituents
 - Performance-Based License Condition
 - Viability at NRC



Non-11e.(2) White Paper Topics

- Ultimate Goals:
- **Propose Generic Waste Acceptance Criteria for Categories of Candidate Materials**
- **Develop Practical Assumptions on Which Licensees May Base *Direct Disposal* License Amendment Request(s) Without Additional Site-Specific Modeling**



Candidate Materials

- Practical “Upper Bound” Radionuclide Activity Assumption:
 - Waste Materials Based on an Assumption of 1% U₃O₈ “High-Quality” Uranium Ore (see GEIS p. A. 12-13)
 - 93% Recovery Efficiency of Uranium
 - Licensed or Licensable Disposal Capacity



Candidate Materials

- **Source Material:**
 - Wastes Contaminated with Natural Uranium/Thorium
 - Mineral Processing and FUSRAP Wastes
 - AEA Materials
 - Wastes Contaminated with Depleted Uranium
 - DOE and Private Licensee Stockpiles
 - AEA Materials



Candidate Materials

- Wastes Containing Special Nuclear Material:
 - Fuel Cycle Facility Wastes/Stockpiles
 - LEU Contaminated Materials
 - Transportation
 - No Criticality Issues
 - Transport Containers
 - Emplacement & Long-Term Disposal
 - No Criticality Issues
 - Solubility (Potential Migration)
 - Low Radium and Low Radon Emissions



Candidate Materials

- **NORM/TENORM:**
 - Mining and Mineral Process Wastes
 - EPA and CRCPD Agree 11e.(2) Impoundments Should Be Viable Disposition Pathways
 - Radium Primary Constituent of Concern



Candidate Materials

- Low Activity Mixed Wastes (LAMW):
 - Contain Both Radiological and *Non*-Radiological (Hazardous Constituents)
 - Potential Dual or Overlapping Jurisdiction Concerns
 - NRC Radiological
 - EPA *Non*-Radiological
 - Hazardous Constituents Anticipated in 11e.(2) Byproduct Material
 - 10 CFR Part 40, Appendix A, Criterion 13



Fundamental Conclusions

- Existing Jurisdictional/Political “Hurdles” Should Not Be an Impediment to Direct Disposal
 - Disposition Pathways Should Be Based on Risk and Not Jurisdictional/Political Obstacles
- Many Candidate Waste Streams Are *Similar* to 11e.(2) Byproduct Material
- Let The Regulatory “Marketplace” Dictate Final Disposition Pathway for Non-11e.(2) Materials



Practical Implications

- EPA's Recent Advanced Notice of Public Rulemaking (ANPR):
 - Implement an Integrated Approach to Disposal of LAMW and Low Activity Radioactive Waste (LARW)
 - Develop Waste Activity Assumptions for Disposition Pathways



EPA ANPR Disposition Pathways

- RCRA Subtitle D Facilities
- RCRA Subtitle C Facilities
- Low-Level Waste Disposal Facilities (Part 61)
- 11e.(2) Disposal Facilities



Conclusion

- NMA/FCFF Submit That NRC and EPA Should Support a Coordinated Approach to *Allowing* 11e.(2) Disposal Facilities to Be a Viable Disposition Pathway for Non-11e.(2) Waste Materials

