Updates to NRC's Consolidated NMSS Decommissioning Guidance

Kristina L. Banovac, Robert L. Johnson, Duane W. Schmidt, and Theodore B. Smith: U.S. Nuclear Regulatory Commission, Decommissioning Directorate

http://www.nrc.gov/what-we-do/regulatory/decommissioning/reg-guides-comm.html

GUIDANCE TOPICS IN DRAFT SUPPLEMENT 1 TO NUREG-1757

Restricted Use and Institutional Controls:
- LTR's risk-informed, graded approach for ICs
- Two new IC options, with NRC long-term oversight:
  - LTC license: possession-only license, license conditions note restrictions on site use and necessary monitoring, maintenance, or reporting
  - LA/RC: legal agreement between NRC and licensee, LA requires licensee to record restrictive covenant, describing restrictions on site use, with legal recordation body
- Total system approach to sustain site protection at restricted use sites

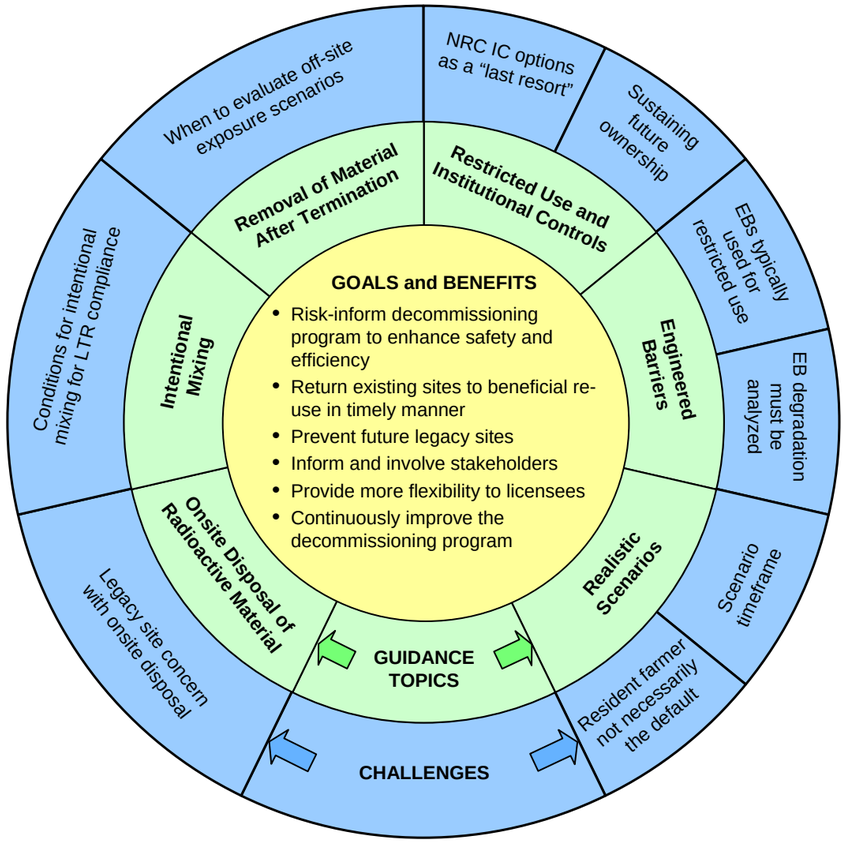
Engineered Barriers:
- Risk-informed graded approach to EBs
- EB analysis process and technical basis for EB performance
- Potential performance and degradation mechanisms
- Example of erosion protection

Realistic Scenarios:
- Selection and justification of exposure scenarios based on reasonably foreseeable future land use - land uses likely within the next 100 years, considering land use trends and plans
- Unlikely scenarios are evaluated to risk-inform the decision

Onsite Disposal of Radioactive Material:
- Onsite disposal under 10 CFR 20.2002 acceptable if resulting dose:
  - "few millirem" per year
  - 100 mrem/yr with additional financial assurance to decommission disposal
  - 25 mrem/yr for short-lived materials, license termination not imminent

Intentional Mixing:
- Acceptable to meet waste acceptance criteria of off-site disposal facilities (current practice)
- Acceptable to meet LTR criteria if:
  - Part of an overall approach that is ALARA
  - Area containing mixed soil is no greater than original contamination footprint
  - No uncontaminated soil from outside footprint, except in cases where it is the only viable alternative to meeting LTR criteria

Removal of Material After License Termination:
- Clarifies what building-related materials *may remain onsite* at license termination
- Acceptable approaches:
  - Materials meet previously approved (*offsite*) release criteria
  - For volumetric contamination: potential dose from off-site uses is less than "few millirem" per year
  - Bare building structures result in dose that meets LTR criteria



ACRONYMS			
LTR	License Termination Rule (10 CFR 20, Subpart E)	LA/RC	Legal Agreement with Restrictive Covenant
LTC	Long Term Control (license)	EB	Engineered Barrier
		IC	Institutional Control

CHALLENGES

NRC IC options as a "last resort"
NRC IC options are "last resort of last resort" for decommissioning; licensees must meet eligibility criteria for restricted use and must demonstrate failure to establish other legally enforceable ICs or independent third party

Sustaining future ownership
Sustaining future ownership of private restricted use sites will be challenging

EBs typically used for restricted use
EBs typically used for restricted use; LTR requirement for dose caps assuming ICs fail warrants analysis of EB degradation without active maintenance and with inadvertent intruder

EB degradation must be analyzed
If EBs are used as part of compliance with LTR criteria, degradation must be analyzed, including analysis of uncertainty in long-term performance without active maintenance

Scenario timeframe
Realistic scenarios — reasonably foreseeable future land use (likely within 100 years) used to determine exposure scenarios for 1000-year dose assessment for LTR compliance

Resident farmer not necessarily the default
In evaluating reasonably foreseeable future land uses, licensees do not have to default to a resident farmer scenario

Legacy site concern with onsite disposal
For the 100 mrem/yr plus additional financial assurance option, there are concerns that onsite disposals under this option may result in legacy sites

Conditions for intentional mixing for LTR compliance
Must be part of an overall ALARA approach to cleanup, no clean soil from outside footprint

When to evaluate off-site exposure scenarios
For residual radioactivity in materials that may be removed from a site after license termination, the dose assessment must evaluate or bound doses from potential off-site uses

PROCESS FOR UPDATING DECOMMISSIONING GUIDANCE

LTR Analysis Commission Papers [May 2003 and March 2004]
Staff analysis to address several LTR implementation issues

Regulatory Issue Summary 2004-08 [May 2004]
Informed stakeholders of LTR Analysis, Commission direction, and preliminary guidance

Decommissioning Workshop [April 2005]
Provided opportunity for early stakeholder involvement in development of guidance on LTR Analysis issues

NUREG-1757, Draft Supplement 1 [September 2005]
Contained draft guidance on LTR Analysis issues; published for public comment

Commission Consultation [planned May 2006]
Staff shares results of stakeholder comments and input on guidance with Commission

Finalize Guidance [planned September 2006]
Staff finalizes guidance in NUREG-1757, Draft Supplement 1