



***U.S. EPA URANIUM AND THORIUM
MILL TAILINGS
REGULATIONS REVIEW***

Public Information Meeting

Tuba City, AZ

September 15, 2010

UraniumReview@epa.gov

Meeting Agenda

6:30 PM	Welcoming Statements and Introductions
6:40 PM	EPA Presentation: Overview of EPA Regulatory Review and Existing Standards
7:15 PM	Audience Questions – Round 1 Public Input (5 minutes each) Audience Questions – Round 2
9:30 PM	Wrap-up Adjourn



Meeting Process

Meeting Presentations

- Sign up to provide input
- Limit your presentations to 5 minutes

Questions for EPA

- EPA will address the questions you write on the index cards
- If you have additional questions during the meeting, write them on the provided index cards
- Raise your hand and we will come and collect them



Introductions

Loren Setlow

- *EPA Office of Radiation and Indoor Air
Washington, DC*

Linda Reeves

- *EPA Region 9, Office of Water
San Francisco, CA*

Reid Rosnick

- *EPA Office of Radiation and Indoor Air
Washington, DC*



Background

The Environmental Protection Agency (EPA) is reviewing and potentially revising its regulations for uranium and thorium milling:

- 40 CFR Part 192 issued under authority of Uranium Mill Tailings Radiation Control Act (UMTRCA)
 - Establishes health, safety and environmental protection standards utilized by U.S. Nuclear Regulatory Commission (NRC) and its Agreement States, and U.S. Department of Energy (DOE) for their oversight of uranium and thorium extraction facility licensing, operations, sites, and wastes
- 40 CFR Part 61, Subpart W, issued under authority of the Clean Air Act (CAA)
 - Provides standards for radon emissions from active uranium mill tailings impoundments
- These regulations apply to byproduct material from conventional mills, In Situ Leach/Recovery (ISL/ISR) facilities, and heap leach facilities, but not conventional mines (open pit or underground)

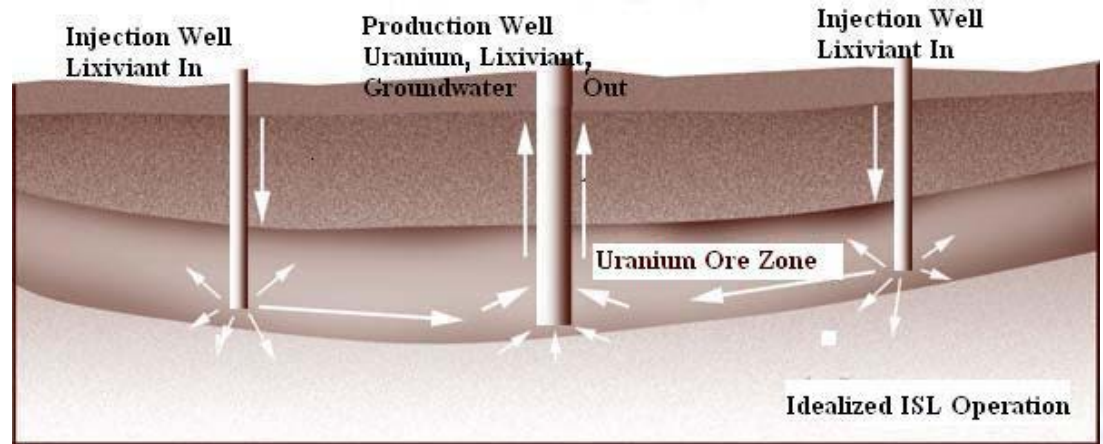
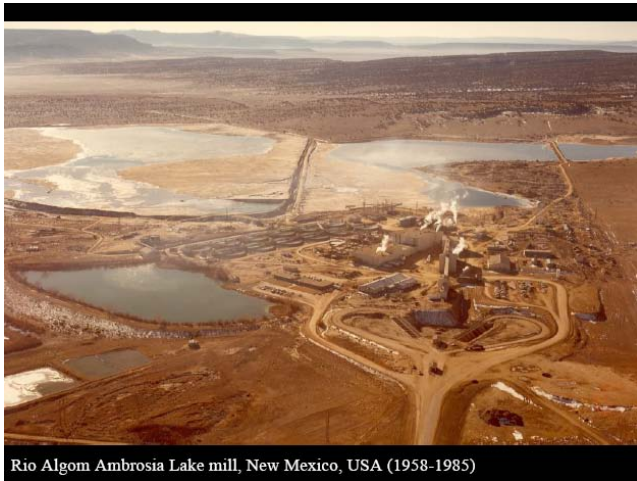


Background

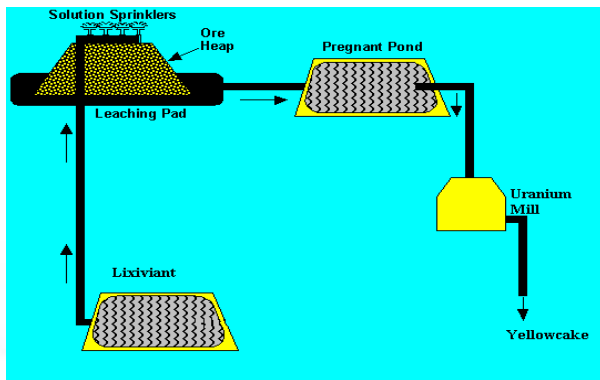
- Over 20 years since regulations were originally issued
- This meeting is intended to provide the public with an opportunity to learn what EPA is doing in its current regulations review
- Provide the public with an opportunity to offer input to the reviews at an early stage
- This review is being conducted before any decision has been made to formally propose any new draft rules for public comment



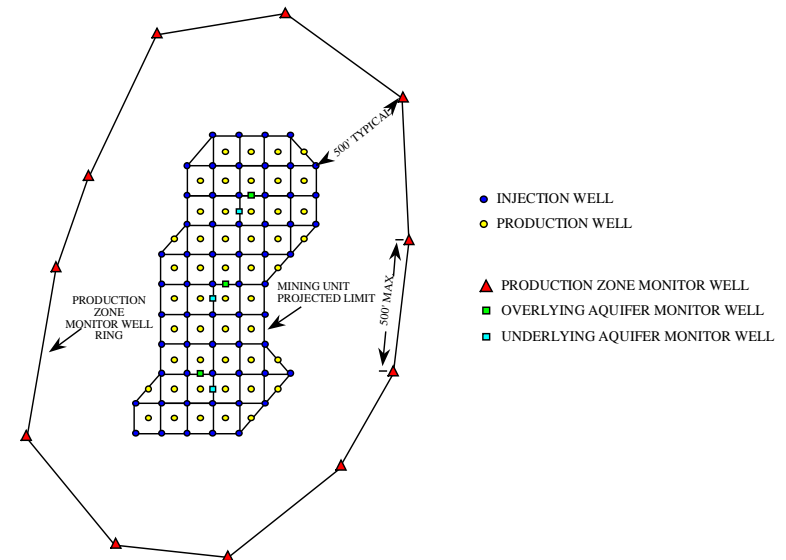
Background



Conventional Surface mill



Heap leaching



Background

Under UMTRCA, EPA authority limited:

- Issue health, safety, environmental protection standards for use by NRC and its Agreement States, DOE
- Concurrence role over NRC regulations to implement EPA standards
- Facility licensing/operations (mills in operation 1978 or later) overseen by NRC or its Agreement States
- Reclamation of closed conventional mills and cleanup of lands/buildings contaminated by mill tailings overseen by DOE with NRC concurrence



Background

EPA does have other regulatory authorities over uranium mills, ISL, heap leach facilities

- CAA--40 CFR Part 61, Subparts W (and A)
- Clean Water Act—40 CFR Part 440, Subpart C
 - Issuance of NPDES permits
- Safe Drinking Water Act—40 CFR Parts 144-146
 - Issuance of injection well (UIC) permits
 - Issuance of Aquifer Exemptions
- National Environmental Policy Act review authority
- CERCLA (Superfund) authority
- RCRA authority



40 CFR Part 192

- Over 25 years since originally issued, ~15 years since last update for groundwater protection
- Standards include:
 - Construction standards for mill tailings impoundments
 - Cross-reference RCRA regulatory requirements
 - Radon emission standards—
 - Controls to be effective for up to 1000 years, to the extent reasonably achievable, and, in any case, for at least 200 years
 - Releases of radon-222 not to exceed 20 picocuries per square meter per second



40 CFR Part 192

- Limits on groundwater concentrations of hazardous substances including radionuclides—concentration limits must not exceed whichever is higher:
 - Background level of that constituent, or
 - MCLs listed in 40 CFR Part 192, or
 - Alternate Concentration Limits (ACLs)
- Remediation standards for contaminated soils/buildings
 - Concentration of radium-226 not to exceed background level by more than—
 - 5 pCi/g, averaged over the first 15 cm of soil below the surface, and
 - 15 pCi/g, averaged over 15 cm thick in layers of soil more than 15 cm below the surface
 - Gamma radiation \leq 20 microRoentgens (mR) per hour above background



40 CFR Part 192

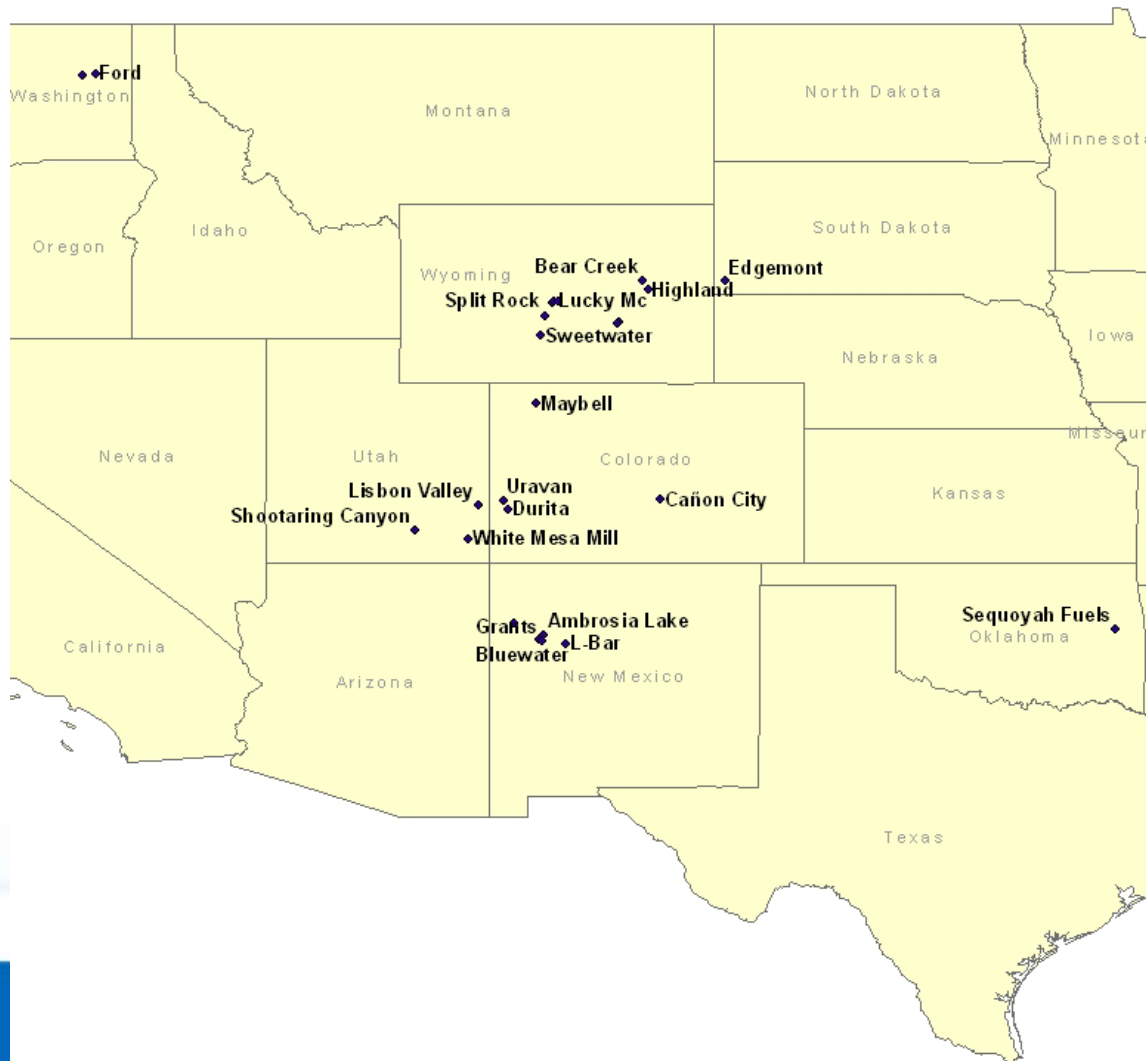
- Requirements for:
 - monitoring,
 - corrective action,
 - post-closure monitoring
- Provides for acceptance of alternate feed at operating mills
- Provides environmental protection standards for operating thorium mills



Title I Closed Mills



Title II Mills (Excluding ISL/ISRs)



ISL/ISRs (Closed, Active, Standby)



Proposed ISL/ISRs, Mills, Heap Leach Facilities

NRC license applications

Expected Applications for New Facilities, Restarts, Expansions, and Renewals					
Company	Site	Design type	Estimated Application Date	State	Letter of Intent
Fiscal 2007 Applications					
Cogema	Christensen Ranch	ISR - Restart	Rec. 4/07, Comp. 9/08	WY	None
Cameco (Crow Butte Resources, Inc.)	North Trend	ISR - Expansion	Received June 2007	NE	None
Cameco (Crow Butte Resources, Inc.)	Plant Upgrade	ISR - Expansion	Rec. 10/06, Comp. 12/07	NE	None
Fiscal 2008 Applications					
Lost Creek ISR, LLC	Lost Creek	ISR - New	Resubmitted Mar 2008	WY	05/23/07
Uranerz Energy Corp.	Hank and Nichols	ISR - New	Received December 2007	WY	06/27/07
Uranium One	Moore Ranch	ISR - New	Received October 2007	WY	05/31/07
Uranium One	Jab and Antelope	ISR - New	Review Postponed	WY	05/31/07
Fiscal 2009 Applications					
Powertech Uranium Corporation	Dewey Burdock	ISR - New	Resubmitted 8/09	SD	01/26/07
Fiscal 2010 Applications					
Uranium One (Energy Metals Corporation)	Ludeman	ISR - New	Withdrawn	WY	02/26/09
Cameco (Crow Butte Resources, Inc.)	Three Crow	ISR - Expansion	Rec. August 2010	NE	01/11/10
Uranium One (Energy Metals Corporation)	Allemand-Ross	ISR-Expansion	Sep-10	WY	02/26/09
Fiscal 2011 Applications					
Lost Creek ISR, LLC	Lost Creek	ISR - Expansion	Nov-10	WY	01/06/10
UR-Energy Corp.	Lost Soldier	ISR - Expansion	Dec-10	WY	01/06/10
Strata Energy, Inc.	Ross	ISR - New	Dec-10	WY	01/08/10
Titan Uranium USA, Inc.	Sheep Mountain	Heap Leach - New	Apr-11	WY	02/16/10
Neutron Energy	Marquez	Conv. - New	May-11	NM	01/15/10
Uranium Energy Corporation	Grants Ridge	Heap Leach - New	Jun-11	NM	01/15/10
Cameco (Power Resources, Inc.)	Smith Ranch/Highland CPP	ISR - Expansion	FY 2011	WY	01/14/10
Wildhorse Energy	West Alkali Creek	ISR - New	TBD	WY	01/07/10
Rio Grande Resources	Mt. Taylor	Conv. - New	TBD	NM	12/15/09
Fiscal 2012 Applications					
Strathmore Minerals Corporation	Gas Hills	Conv. - New	Oct-11	WY	01/18/10
AUC LLC	Reno Creek	ISR - New	Dec-11	WY	04/13/10
Strathmore Minerals Corporation	Roca Honda	Conv. - New	Dec-11	NM	01/18/10
Cameco (Crow Butte Resources, Inc.)	Marsland	ISR - Expansion	Jun-12	NE	01/11/10
The Bootheel Project LLC	Bootheel	ISR-New (Satellite)	Jul-12	WY	08/09/10
Fiscal 2013 Applications					
Cameco (Power Resources, Inc.)	Ruby Ranch	ISR - Expansion	FY 2013	WY	01/14/10
License Renewals					
Cameco (Crow Butte Resources, Inc.)	Crawford, NE	ISR	Received Dec. 2007	NE	
Uranium One	Irigaray/Christensen Ranch	ISR	Received May 2008	WY	
Cameco (Power Resources, Inc.)	Smith Ranch/Highland	ISR	Aug-10	WY	
Hydro Resources, Inc.	Crownpoint	ISR	Rec. 8/2002, on hold until 2010	NM	
No. of New Facility Applications =					15
No. of Restart/Expansion Applications =					11
No. of License Renewals =					4
Total No. of Licensing Actions					30



Relationship Between EPA and NRC Requirements for ISL/ISR Facilities

Under UMTRCA authority, EPA 40 CFR Part 192 standards provide for groundwater protection during production and for aquifer restoration following production. As interpreted by NRC for ISL/ISR licenses:

- Protection includes the underground mining unit and aquifers above, below and adjacent
- During operations, and prior to closure, monitoring and corrective actions are required to protect groundwater at compliance point(s) from excursions—this is regardless of exempted aquifer status
- Applies to surface and subsurface facilities



Relationship Between EPA and NRC Requirements for ISL/ISR Facilities

Under UMTRCA authority, EPA 40 CFR Part 192

- As interpreted by NRC:
 - Restoration Standards require groundwater hazardous constituents to be restored to background or maximum concentration limits, whichever is higher
 - After considering practicable corrective actions, ACL's may be applied for by the operator, and granted by NRC (or its Agreement States) for each contaminant:
 - provided limits are as low as reasonably achievable,
 - the determination has taken into consideration factors enumerated in EPA RCRA, and NRC regulations



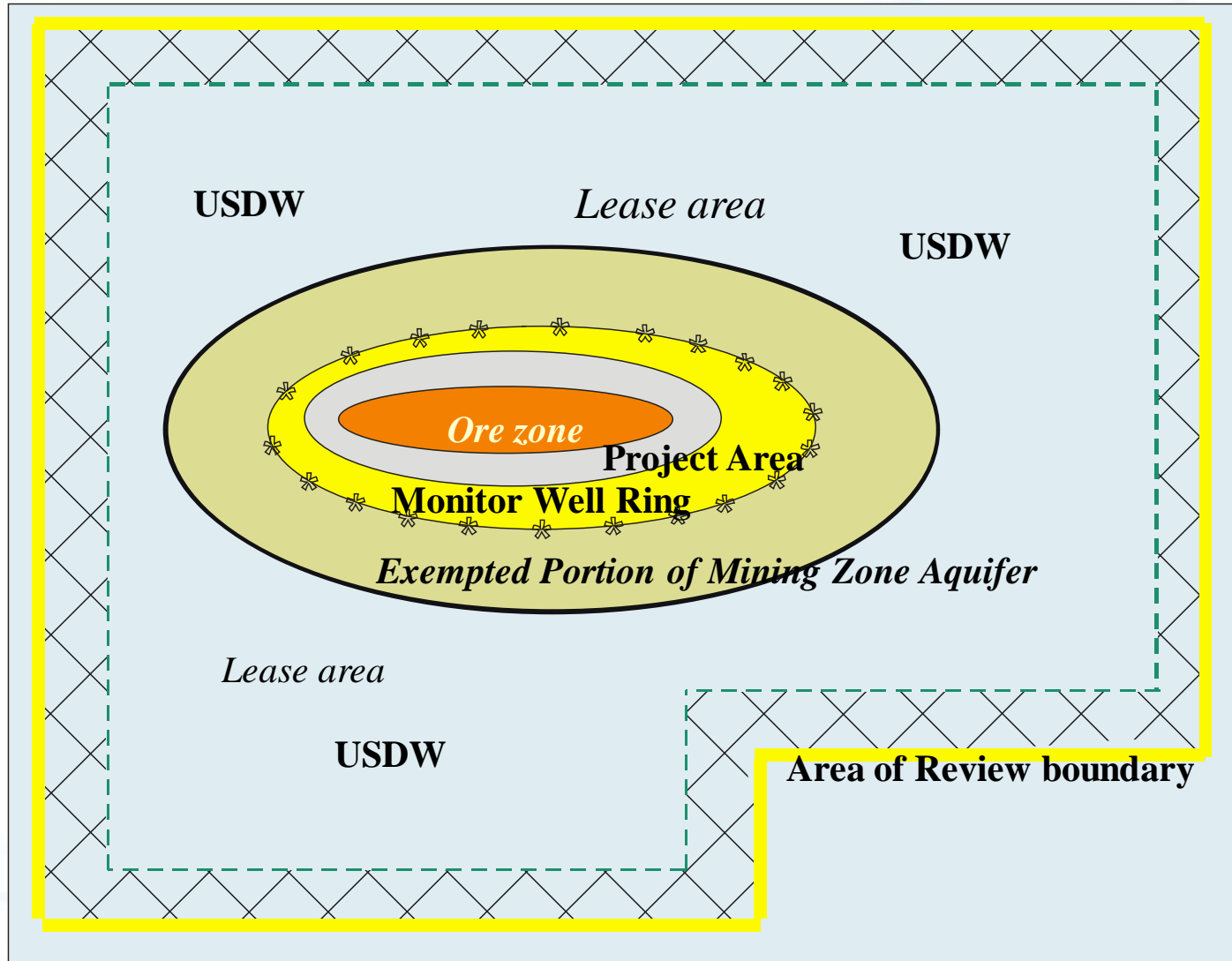
Relationship Between EPA and NRC Requirements for ISL/ISR Facilities

Under Safe Drinking Water Act (SDWA) authority, EPA promulgated regulations 40 CFR Parts 144-146

- EPA issues underground injection control well permits (Class III) for uranium ISL/ISR facilities
- EPA issues aquifer exemptions for aquifers or portions of aquifers from SDWA protections
- EPA has granted primacy to some states for UIC and Aquifer Exemption approvals
- ISL/ISR facilities cannot operate without these



Relationship Between EPA and NRC Requirements for ISL/ISR Facilities



Responsibilities of Other Federal, Tribal and State Agencies for Uranium Facilities

- Approval/permitting of conventional mines dependent on land ownership, Federal, Tribal and State laws
- For conventional mill and ISL/ISR facilities, Agreement States license and oversee operations. In many cases, States may have own permitting and oversight role
- Federal land management agencies (such as BLM) may have own permitting responsibilities, plus agreements with NRC to fulfill National Environmental Policy Act and other oversight



40 CFR Part 61, Subpart W

- Promulgated on 12/15/1989 -- Applies to radon emissions from operating uranium mill tailings -- flux standard: 20 pCi/m²-sec
- After 12/15/1989, new impoundments must meet one of two new work practices to achieve at least equivalent emissions reductions
 - Phased disposal – Impoundment size of 40 acres or less
 - Continuous disposal – dewatered tailings with no more than 10 acres uncovered
 - Both must meet design, construction, groundwater monitoring standards at 40 CFR 192.32(a)



40 CFR Part 61, Subpart W

- Review began after receiving Notice of Intent to Sue (NOI) by two Colorado environmental groups
 - Based on EPA's alleged failure to review & revise regulation within ten years after enactment of Clean Air Act Amendments of 1990 (11/15/2000)
 - Plaintiffs filed suit against EPA in October 2008
 - Settlement agreement reached November 2009



40 CFR Part 61, Subpart W

- While performing early research for the NOI, EPA determined uranium ISL/ISR and heap leach impoundments are subject to Subpart W:
 - Preconstruction approval, impoundment construction and operation requirements in 40 CFR Part 192 cross referenced in Subpart W
- Annual reporting requirements, notification in advance of testing



Regulatory Review Process (1)

Existing regulations and standards are being reviewed to determine if they are still appropriate in light of:

- Dominant use of ISL/ISR, now principal means of uranium recovery in U.S., and for heap leach facilities
 - Lack of provisions in current regulations
 - Different measurement methods needed for assessing radon emissions at evaporation ponds than for mills (Method 115 of 40 CFR Part 61, Subpart W)
 - We requested that ISL/ISR facilities provide radon flux data from their evaporation ponds
- Technology and design, historical performance of mill tailings impoundments and ISL/ISRs



Regulatory Review Process (2)

Existing regulations and standards are being reviewed to determine if they are still appropriate also in light of:

- Changes in risk and dose factors for radiation/radon,
- Principal scenarios for exposure,
- Subsistence and cultural lifestyles of affected communities including Tribal, EJ and children's health issues
- Free release of some facility sites after decommissioning
-- implications for 40 CFR Part 192



Regulatory Review Process (3)

Existing regulations and standards are being reviewed to determine if they are still appropriate also in light of:

- Changes in EPA protective standards for hazardous substances in groundwater and drinking water for 40 CFR Part 192
- Changes in economics of extraction & site remediation
- Potential for uranium/thorium extraction in different geographic locations
- Court cases



Coordination and Stakeholder Input

Federal Agency Coordination

- NRC and DOE
 - Other involved agencies (Interior, Agriculture...)
 - ISCORS—Interagency Steering Committee on Radiation Standards
-
- EPA Intra-agency Workgroups
 - Regional offices
 - HQ – Office of Water, Office of Research and Development, Office of Solid Waste and Emergency Response, Office of General Counsel, Office of Policy



Coordination and Stakeholder Input

- Presentations at State association and other conferences:
 - CRCPD, ASTSWMO
 - National Mining Association Uranium Recovery Workshop
 - National Tribal Science Forum, National Tribal Water Council
 - Navajo Uranium Contamination Workshop
- EPA Regional Offices in coordination with EPA HQ to provide lead role for outreach to:
 - Public
 - Industry
 - States
 - Tribes and EJ populations
 - Environmental and other NGO's



Coordination and Stakeholder Input

Holding of Public Information Meetings (40 CFR Part 192):

- Casper WY—May 2010
- Denver, CO—May 2010
- Tuba City, AZ—September 2010

Public Stakeholder Meetings (Subpart W)

- on City, CO – June 2009
- Rapid City, SD – October 2009
- Gallup, NM – November 2009
- White Mesa, UT – May 2010
- Denver, CO – May 2010
- Tuba City, AZ – September 2010



Coordination and Stakeholder Input

40 CFR Part 192

Interactive Internet Site – Discussion Forum

<http://blog.epa.gov/milltailingsblog/>

- Site for public input on discussion topics for this review
- Calendar of events
- Library of relevant documents



Email address for additional public input:

UraniumReview@epa.gov



Coordination and Stakeholder Input

For Subpart W

- Quarterly conference calls to answer stakeholder questions
- Next call – October 5, 2010 – 11:00 AM EDT
- Call in number is 1-866-299-3188. You will be prompted for a conference code, which will be 2023439563. After entering the conference code press the # key and you will then be placed into the conference call



Coordination and Stakeholder Input

For further information on 40 CFR Part 61,
Subpart W review

<http://www.epa.gov/radiation/neshaps/subpartw/rulemaking-activity.html>

Site contains current and historical rulemaking documents, presentations, contact information, useful links

Email address for additional public input:

Subpartw@epa.gov



Contact Information

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Discussion Topics Tonight

- Changes in uranium industry technologies
- Revisions in EPA drinking and groundwater protection standards
- Radon emission standards
- Issues relating to Tribal communities, children's health and environmental justice (e.g., impact on minorities and low-income communities)
- Dose and risk factors and scenarios for assessing radiological and non-radiological risk
- Facilities proposed in states outside existing production locations
- Costs and benefits of possible revisions



Thank You !

