Uranium Milling Regulations

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CDPHE Authority

• Per agreement between US Nuclear Regulatory Commission and Governor, CDPHE is sole regulator of radioactive materials
• Colorado Radiation Control Act (CRS 25-11-101, et seq)
• Colorado Rules and Regulations Pertaining to Radiation Control (6 CCR 1007-1)
• Statute and Regulations reviewed by NRC for compatibility
CDPHE Regulatory Scope

• “...regulations apply to all persons who receive, possess, own, acquire, use, process, store, transfer, or dispose any source of radiation...” Regulations Section 1.1.4
CDPHE Radiation Management Functions

- Compliance Assistance
- Licensing (Specific and General)
- Compliance Inspections
- Security of sources of concern
- Incident and Allegation Response
- Regulatory Development
- Remediation Oversight
CDPHE Uranium Regulation

- Naturally Occurring Radioactive Materials (NORM) and Technologically Enhanced NORM (TENORM)
  - Drinking water sludge
  - Uranium overburden
- Uranium Recovery
  - Uranium mills
  - In situ recovery
- Do not regulate uranium ore in its natural state, or conventional mining (MSHA – DNR)
- Exemptions for depleted uranium (less U-235) in counterweights and unimportant quantities
- Feds regulate enriched uranium (more U-235)
Local Authority

- Land use and zoning issues
- Review of Environmental Report
- Comment on license application
Other Authorities

- NRC retains authority over federal sources, reactors and large irradiators.
- EPA retains authority over radon emissions from mill tailings piles and mines (NESHAPS).
- MSHA has authority over industrial safety at mills, and radiation for miners.
- DNR has authority over permitting at mines.
- DOT has authority over transportation.
Status of Uranium Facilities in Colorado

• Cotter Cañon City Mill
  – Active license; currently in stand down; Superfund site.
• PowerTech In Situ Recovery (Weld County)
  – Collecting baseline data for license application
• Energy Fuels Pinon Ridge Mill (Paradox Valley)
  – Collecting baseline data for license application
• UMETCO Uravan Mill
  – Decommissioning physically completed, Superfund site.
• Maybell and Durita in license termination process
Lessons Learned

- Public health and environmental protection
- Importance of siting
- New technologies and methods
- More focus on facilities as well as impoundments
- Water/liquids management
- Control of tailings
- Design cells in stages
- Decommissioning timing
- Adequate financial assurance
Uranium Mill Regulatory Requirements Summary

• CDPHE
  – Radioactive Materials License
  – Surface water discharge permit (if applicable)
  – Air Permits (construction and operation)
  – Solid or hazardous waste (if applicable)
• Local Government (or federal or state)
  – Land Use
• EPA
  – Air permit (Radon NESHAPS)
• Other agencies (if applicable)
Radioactive Material License Application Process

- Application submitted to CDPHE
- Completeness determination by CDPHE
- Public hearings/meetings about the application
- Consultation with other agencies
  - County Commissioners review environmental report
- Adequacy determination by CDPHE
- Decision document and draft license (if applicable) by CDPHE
- Public hearing on license, if requested
- Appeals process
Radioactive Material License Application Highlights

• Project description
• Area/site characteristics
• Materials management description
• Equipment, facilities, procedures
• Radiation protection for workers and public
• Decommissioning/financial assurance
• Environmental Assessment Report
Area/Site Characteristics

- Site location
- Demographics
- Meteorology
- Hydrology
- Geology
- Seismology
Decommissioning/Financial Assurance

• Plans required up front
  – How is the plant going to be torn down?
  – How is the site going to be reclaimed?
  – What will the cap look like?

• Money committed up front
  – Assumes third party does all the work
  – Based on worst case scenario
Environmental Assessment Report

- Radiological and non-radiological short term and long term impacts
  - Environmental
    - Surface water
    - Groundwater
    - Soils
    - Air
    - Radon
    - Flora
    - Fauna
  - Economic
Environmental Assessment Report (cont’d)

• Radiological and non-radiological short term and long term impacts (cont’d)
  – Social
  – Technical
  – Transportation
    • Infrastructure
    • Effects of accidents
  – Other

• Can require “such other information as the Department may deem necessary”
  
  *(Regulations Section 18.3.1)*
County Role

- Up to $50,000 provided by applicant to assist review of the application and environmental report
- County Commissioners provide comment to CDPHE on environmental report within 90 days of first public meeting
- County technical input critical to evaluation of social, economic and local impacts
License Application Resources

- Regulations Parts 1, 3, 4, 10 and 17
- Regulations Part 18, Licensing Requirements for Uranium and Thorium Processing
- Regulations Part 18, Appendix A, Criteria relating to the Operation of Mills and the Disposition of the Tailings or Wastes from these Operations
- NRC Guidance: NuReg 1620, Reg Guides 3.5, 3.8, 4.14, etc.
License Review Timeline

• Application submitted at least 9 months prior to anticipated construction
  – Superseded by RCA timeline (below)
• Construction prohibited prior to license approval
• Preoperational monitoring for one full year prior to any major site construction (and data required in application)
• Completeness determination within 30 days of submittal
License Review Timeline (cont’d)

• First public meeting/hearing within 45 days of completeness determination; second with 30 days of the first

• County Commissioner review of environmental report within 90 days of first public meeting

• CDPHE approve or deny application within
  – 270 days of response from County Commissioners, or
  – 360 days of second public meeting if no County Commissioner response
Public Process

- Application and related documents placed on CDPHE web site and in local repository
- Comments received throughout review process
- Mandatory public meetings/hearings by applicant at 45 and 30 days
- Additional public meetings by CDPHE throughout review process
- Public hearing after decision may be held
- The most stakeholder-focused process in US
Licensed Facility Oversight

- Monitoring of chemicals and radiation (workers and public), radon, particulates, discharges and groundwater, vegetation, biota
- Yellowcake Inventory
- Documentation and reporting
- Compliance inspections
- Enforcement
Closeout

- Site must be cleaned up and restored at end of operations
- Mill tailings and contaminated facilities buried on-site in engineered disposal cells
- Thick cap to contain the radon and keep water out
- 1,000 years post closure monitoring by Feds.
Questions?

• Contact –
  – Steve Tarlton, 303-692-3423
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  – Toll Free, 1-888-569-1831, then last four digits of phone number

• Visit Radiation Management web site at http://www.cdphe.state.co.us/hm/rad/