

HALEU Security Theft and Diversion at Fixed Sites and In Transit

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Key Messages

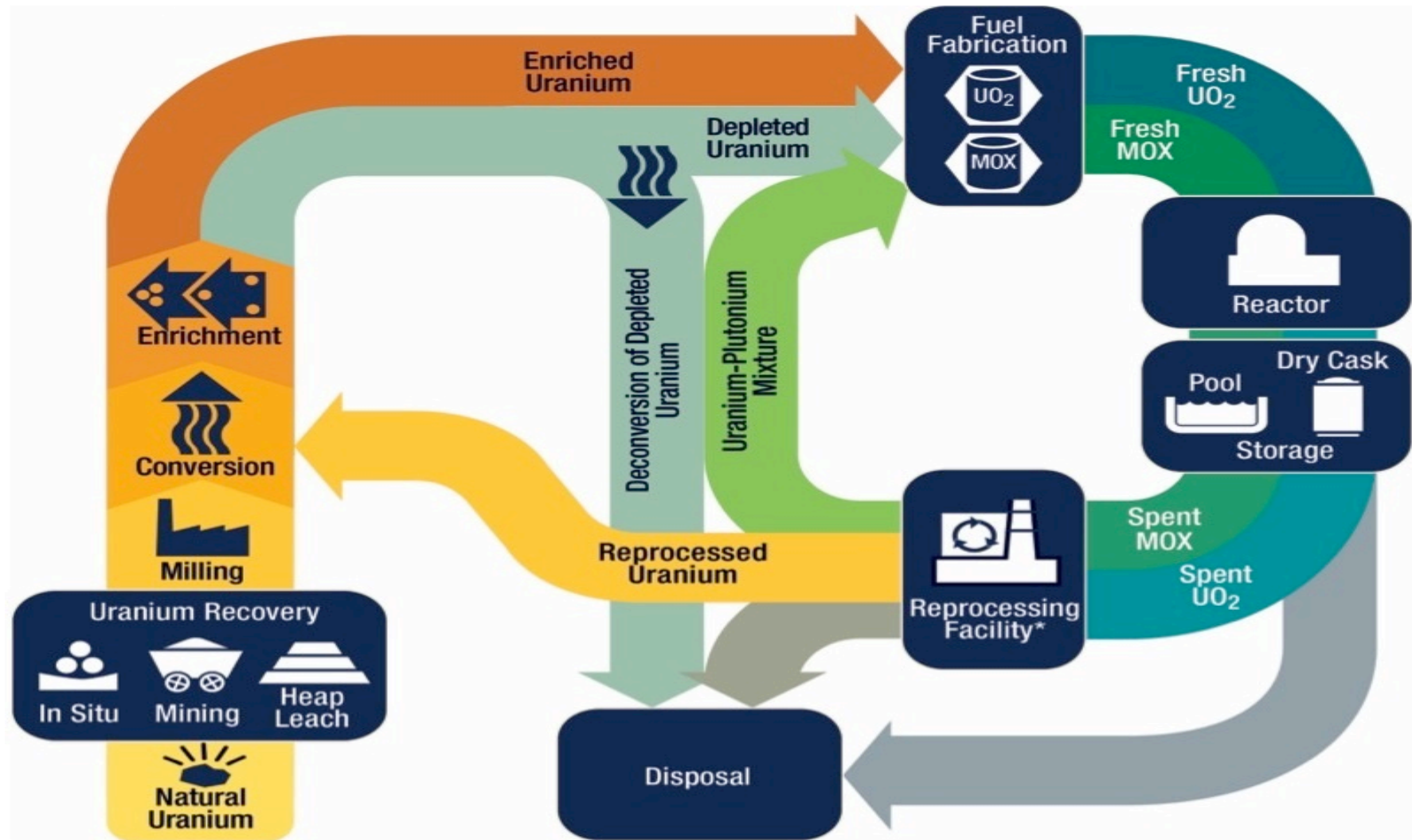
- Current regulatory framework allows NRC to securely license facilities using high assay low enriched uranium (HALEU) material
- Current focus is to streamline security throughout the life-cycle of HALEU fuel

Topics

- New advanced reactors and accident tolerant fuels driving expanded use of HALEU material
- Focus of presentation
 - Material enriched to between 10 and 20 percent (Category II quantities of SNM)
 - Fixed site (e.g., fuel facilities, medical isotope facilities, fresh fuel at advanced reactors)
 - Material in transit

NRC Enhanced Security to Address Current Threat

- Issued Orders following 9/11
- Promulgated numerous rules
- Enhanced Security of Special Nuclear Material Rulemaking
 - Incorporated Category I and III Orders
 - Considered Material Attractiveness



Existing NRC Physical Protection Requirements

- Category II quantities of SNM
 - 10 CFR 73.67(a), (b), (c), (d), and (e)
- Protective strategy
 - “Minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions; and facilitate the location and recovery of missing special nuclear material.”
- Applicable guidance
 - Regulatory Guide 5.59, “Standard Format and Content for a Licensee Physical Security Plan for the Protection of Special Nuclear Material of Moderate or Low Strategic Significance”

Current Approach

- Stakeholder outreach on HALEU protection
- Pre-licensing meetings with applicants
- Risk-informed case-by-case basis evaluations
- Site-specific license conditions
- Supplement requirements should be fairly and reasonably applied
- Interagency community interface on HALEU protection issues



Physical Protection Systems

- Change in detection and response expectations drive the need for the supplemental measures.
- Considering material attractiveness, the specific supplemental measures could vary
- In general, fewer supplemental measures would be required for facilities that do not process material or where the form of the material is not changed
- Additional supplemental measures would be required for process facilities with larger quantities of material.
- Changes in dilution could be considered in the development of the physical protection system.

Potential Supplemental Measures – Fixed Sites

- Greater control over material during use and storage
- Consideration of vital equipment (depends on material and processes)
- Better defined access controls (background checks)
- Enhancements to controlled access area portals and vehicles access
- Enhanced escort requirements
- Random entry searches and enhanced exit searches
- Alarm station
- Security patrols
- Enhanced communication and coordination with law enforcement
- Security equipment maintenance program

Potential Supplemental Measures – Fixed Sites

- For site with larger quantities, the following may also apply
 - Protected area and vehicle barrier
 - Potential for armed guards depending on delay features
 - Expanded intrusion and detection
 - Secondary alarm station

Potential Supplemental Measures – In Transit

- Transfers occur in controlled access area
- Increased key control
- Transport in closed and locked conveyance
- Increased searches
- Increased custody verification

Conclusion

- Pre-licensing activities strongly encouraged
- Use a risk-informed analysis on a case-by-case basis
- Use site-specific license conditions
- Ensure that supplemental security measures are fairly and reasonably applied