Uranium Mining and Milling: Legacies and Remediation

An Overview of IAEA Activities

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The IAEA

- The IAEA is the world's center of cooperation in the nuclear field.
- It was set up as the world's "Atoms for Peace" organization in 1957 within the United Nations.
- The Agency works with its Member States and multiple partners worldwide to promote safe, secure and peaceful nuclear technologies.

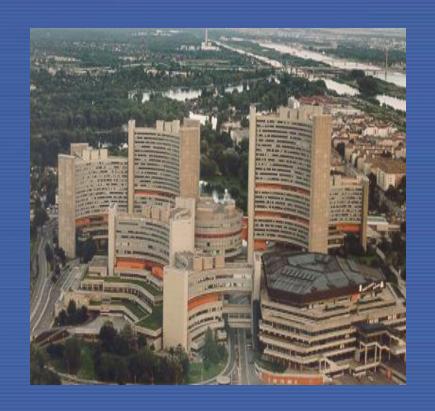




Its Mission and Work

Three main pillars - or areas of work underpin the IAEA's mission:

- Safety and Security;
- Science and Technology; and
- Safeguards and Verification.





The IAEA Statute

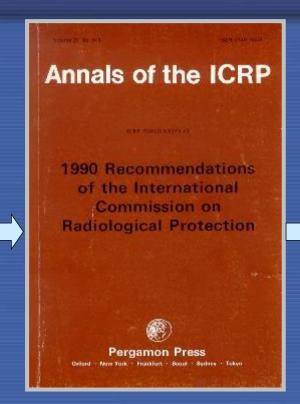
Functions – peaceful uses of atomic energy

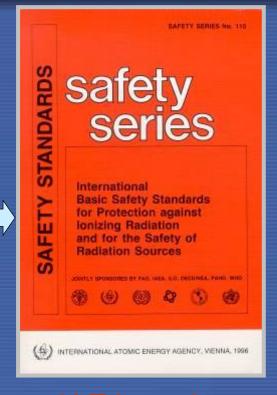
- Promote research, development, practical application
- Exchange of scientific and technical information
- Exchange and training of scientists and experts
- Establish and administer safeguards
- Establish facilities, plant and equipment
- Develop safety standards and provide for their application



Standards Development







UNSCEAR
Effects of radiation

ICRP
Recommendations
for protection

IAEA + other international bodies

Regulatory style standards



Hierarchy of International Safety Standards



Fundamental Safety Principles

Jointly spons ared by Euratom FAO IAEA ILO MO OECDNEA PAHO UNEP WHO









Safety Fundamentals

No. SF-1





Guides

Safety Reports and TECDOCs



Informational support (Guides and Regulations)

No. WS-R-3

IAEA



A IAEA

IAEA Safety Fundamentals – The 10 Principles

- 1. Operator is responsible for safety
- 2. Legal & governmental infrastructure, independent regulatory body
- 3. Justification, limitation of risk
- 4. Optimization (ALARA principle)
- 5. Protect all populations, incl. distant populations, future generations
 - includes waste minimization and reuse / recycling
- 6. Graded regulatory approach commensurate with risk
- 7. Regular safety assessment, apply lessons learned
- 8. Accident prevention
- 9. Emergency preparedness and response
- 10. Intervention must produce net benefit

IAEA Mechanisms to Assist Member States

- Application of the safety standards through:
 - Publications
 - Expert missions
 - Scientific visits
 - Fellowships
 - Training
 - Conferences
 - Workshops
 - Support Services
 - Procurements





Examples of Uranium Production Legacy Sites in Central Asia

Members States participating in an IAEA Regional Project are:

Kazakhstan, Kyrgyzstan, Tajikistan & Uzbekistan

- All 4 Member States are interested in managing and remediating the legacy of former uranium mining and milling activities to protect their population and environment
- These 4 Member States uranium legacy sites have similar issues
- A regional project offers opportunities for improving cooperation and understanding between the participants; it also offers efficiencies in service delivery for IAEA

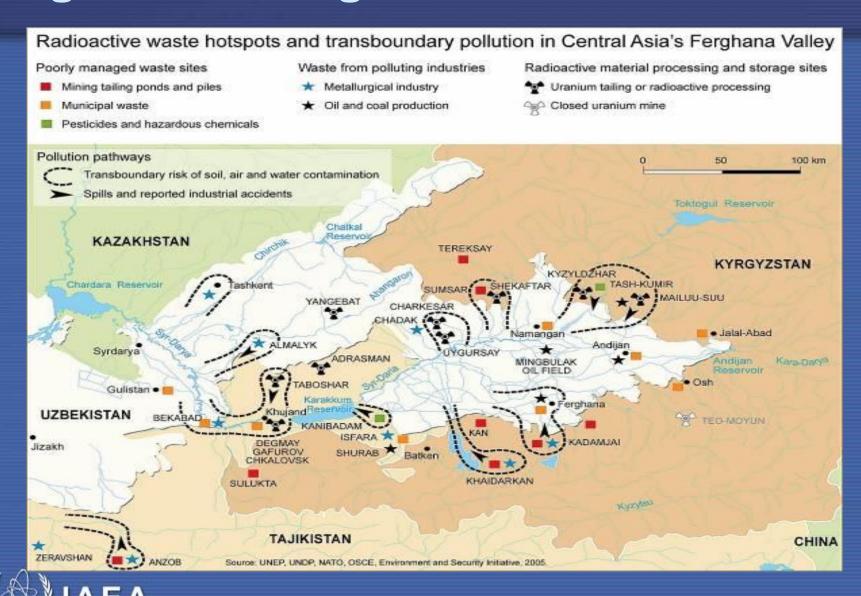


Generalized Location Map





Regional Setting



Needs to Address Legacy Issues

- National Strategy
- Legislation
- Regulatory requirements
- Infrastructure
- Trained personnel
- Financial resources



Stewardship Issues

- Minimal or ineffective institutional controls
- Minimal or nonexistent maintenance programs
- Minimal monitoring programs
- Minimal information sharing or public outreach
- Lack of Regulatory Framework



Tajikistan: Taboshar, Degmai, Gafarov



Process Residues and Former Mill Structure, Taboshar, Tajikistan





Tailings Exposed at Taboshar





Degmai









Kyrgyzstan











Mailuu Suu (Kyrgyzstan) - April 2009





Mailuu-Suu





Min-Kush









Min-Kush Village















Kazakhstan



Stepnogorsk-Waste Piles





Stepnogorsk-Tailings Ponds





Uzbekistan: Charkesar & Yangiabad





Uzbekistan-Uchkuduk





Summary

- In many places the former Uranium facilities are uncontrolled and require institutional controls until remediation.
- The lack of monitoring data, experience and national capacity for remediation are serious issues
- There is a need for LTSM Programs as an interim risk reduction measure at sites where the resources are not available for remediation now or in the near future.



IAEA



...atoms for peace.

