Overview of IAEA CGULS activities
(Coordination Group on Uranium Legacy Sites)

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Coordination Group for Uranium Legacy Sites

- During recent years in a number of MS the Uranium legacy site specific programs were initiated (national and international). Number of International organization (IAEA, EC, EurAsEC, UNDP, NATO, ENVISEC, SIDA, NRC, NRSA, other) are funded or have a plan to continue funding and cooperation to the developing countries, aiming to help in Uranium Legacy sites Remediation Planning, Regulatory Framework and capacity building development.

- In some MS Remediation projects are already going on and funded by EC, EurAsEC other donors. Some countries faced a problem to be able properly manage and coordinate international aid projects, because lack of regulatory infrastructure and experience.

- These assistance may be more efficient if efforts will by synergised and Best experience and Practice can be better disseminated and utilized more wide.
## IAEA Technical Cooperation Projects on Uranium Legacies

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Title</th>
<th>Target countries</th>
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</thead>
<tbody>
<tr>
<td>RER/3/010 (2009-2011)</td>
<td>Supporting Preparation for Remediation of Uranium Production Legacy Sites</td>
<td>KAZ, KIG, RUS, TAD, UKR, UZB, CZR, SLO</td>
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<tr>
<td>RER/9/086 (2005-2008)</td>
<td>Safe management of Residues from Former Mining and Milling Activities in Central Asia</td>
<td>KAZ, KIG, TAD, UZB</td>
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<tr>
<td>UKR2012006 (2013-2015)</td>
<td>Development of an environmental remediation strategy to be used in the former uranium production sites in Ukraine.</td>
<td>UA</td>
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<tr>
<td>KIG/9/003 (2005-2007)</td>
<td>Establishment of a Radioecological Monitoring and Assessment Network</td>
<td>KIG</td>
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<tr>
<td>KIG/9/004 (2007-2008)</td>
<td>Assessment of the Radiation Situation and Public Exposure at the Former Uranium Mining Sites of Minkush</td>
<td>KIG</td>
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<tr>
<td>KIG/7/002 (2009-2012)</td>
<td>Enhancing Radio-ecological Monitoring</td>
<td>KIG</td>
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<tr>
<td>RER/2012033 2014-2015</td>
<td>Improving the capabilities towards the implementation of integrated programs for the remediation of uranium mining and processing legacy sites</td>
<td>EU, AS, AM</td>
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<tr>
<td>INT9175</td>
<td>Promoting safe and efficient clean-up of radioactively contaminated facilities and sites</td>
<td>EU, AS, AM</td>
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CGULS (Coordination Group for Uranium Legacy Sites)

- Coordination group comprised of national and international stakeholders
  - Provide forum for information exchange
  - Support project planning and implementation issues
  - Address radioactive waste management issues
  - Coordination mechanism to avoid duplication of efforts and optimize resources
- Technically supported by IAEA secretariat
Basis for cooperation and development

The IAEA funded projects addressing to remediation preparatory aspects towards developing the remediation capacity in the affected region:

IAEA, TC

1. Regulatory framework,
2. Safety assessment,
3. Site specific monitoring,
4. QA/QC in analytical laboratories and monitoring,
5. Risk communication, and institutional controls

EC

1. To promote cooperation and common understanding of issues among affected countries……
2. To provide expert services and advice to Member States in support of efforts to develop comprehensive environmental impact assessments and feasibility studies for legacy uranium production sites.
3. To provide technical oversight and support in the field as needed.
4. To reinforce the regulatory framework.
A strategic plan was developed with the input of the CGULS MS and Institution working group representatives.

An overarching strategic goal was identified:

- To support affected IAEA MS (Kazakhstan, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan) in the preparedness, planning and implementation of the remediation of uranium legacy sites.

Specific objectives:

1. Coordinate the actions of the members to maximize synergies and avoid duplication of effort.
2. Provide a forum for information exchange.
3. Promote harmonization and implementation of regulatory frameworks.
4. Promote involvement, awareness, and capacity development among the affected stakeholders.

Detailed actions, supporting the objectives and aligned with the goal were developed and currently are implementing.
Objectives and Actions

**Objective 1:** Coordinate the actions of the members to maximize synergies and avoid duplication of effort

**ACTION 1B:**
- Establish an expert working group for Taboshar with representatives from: IAEA/CGULS, Tajikistan, EurAsEC, EC to identify suggested modalities for coordination, reported to CGULS for incorporation into future site projects.

**ACTION 1C:** Establish an expert working group for Minkush with representatives from: IAEA/CGULS, Kyrgyz Republic, EurAsEC, EC to identify suggested modalities for coordination, reported to CGULS for incorporation into future site projects.

First meeting targeted for November 2013 to be held in Moscow and will discuss key principles for cooperation and coordination. Available data, Standard Content of the Remediation Plans, Remediation and Design criteria will be discussed.
Objective 1: Coordinate the actions of the members to maximize synergies and avoid duplication of effort

**ACTION 1D:** The IAEA secretariat will develop a comprehensive survey of national analytical capabilities relevant to ULS site characterization and monitoring to support a future TC program recommendation; prepare a compilation report (analogous to the technical baseline document).

**ACTION 1E:** The IAEA secretariat will develop a comprehensive survey of national monitoring capabilities relevant to ULS management, to summarize CGULS MS monitoring program capacity throughout the region, and recommend enhancements to improve monitoring effectiveness. CGULS MS will respond.

- On the basis of CGULS MS responses, the IAEA secretariat will prepare a compilation report (analogous to the technical baseline document) with an analysis of analytical gaps and recommendations.

- The initial actions already done in July 2013 during Workshop organized by IAEA in Kazakhstan for Comprehensive analyses of the Technical capabilities and preparedness of the analytical laboratory in a Region to provide efficient support of the site specific monitoring programs at the UPLS. Reports and Recommendations are currently under preparation.
Based on the PT evaluations the future capacity building plans for development of the National laboratories and Monitoring networks will be developed.

As the result 12 laboratories from the 14 initially registered had reported to the IAEA their results.

The analytical results of the participating laboratories were compared with the reference values assigned to the reference materials, and a rating system was applied.

The report on analytical survey will be submitted to TC IAEA and EC and will contain assessment current status of analytical capabilities and country specific recommendation regarding further analytical development and training needed.

A- Acceptable  W- Warning  N- Not acceptable  NR- Not reported
Overall laboratory performance score in percentage

\[ O.Score = \frac{(n(A) \times 2) + n(w)}{TNR} \times 100 \]

Where:
- \( n(A) \): Number of acceptable results
- \( n(A) \): Number of Warnings
- \( TNR \): Total number of requested results

Acceptable, 38%
Warning, 7%
Not acceptable, 11%
Not reported, 43%

IAEA
Objective 2: Provide a forum for information exchange

- **ACTION 2A:** Establish a CGULS web page presence in IAEA/CONNECT, create accounts for each CGULS member, post available relevant reports (such as ToRs, SA & EIA, FS examples, site characterization studies, engineering studies, risk assessments), and compile e-mail membership list.

- **http://nucleus.iaea.org/sites/connect-members/cguls/**

- **ACTION 2C:** IAEA will prepare and disseminate a revised “Assessment and Way Forward for Uranium Legacy Production Sites in Central Asia: An International Approach” (“technical baseline document”).

- CGULS members will provide requested information for inclusion.
Case Studies

Assessment recently carried out based on IAEA expert’s missions

**KIG**
- Kadji Say (2006-2007)
- Minkush (2012-2013)

**TAD**
- Taboshar, Degmai (2006-2008)
- Adrasman (2008)

**UZ**

**RU** (Lermontovo, 2009)

**UA** (Dneprodzerzhinsk, 2011)

**PLANS**

Till the end 2013, IAEA has Plan to prepare a Joint Report, which will integrate the outcomes from the number of Regional and National Projects (2006-2012) related to the “Uranium Production Legacy Site Remediation Projects Preparedness issues”

That will make the large set of data and assessment regarding, Regulatory support and Site characterization studies, Monitoring survey and Analytical Laboratory capacity building development, Safety Assessment results and other available information as a basis for Remediation Project Planning at the regional level
IAEA & Inter-Agencies activities are a basis for further Assessments in the framework for EC Remediation.
On request of the UA Ministry of Energy, IAEA experts visited Ukraine former “Pridneprovsky Chemical Plant” (one of the largest UPLA in Europe 42 mln. tons of residues in one place). Report was submitted to the counterpart in October 2012 (State Program on 2014-2020 was revised according IAEA recommendation)

In 2013 Kyrgyz Government requested to carry out IAEA/EC expert’s mission to Mailuu Suu, to evaluate an existing state of the UPLS and help SAP for further Remediation activities in Mailuu Suu. The mission was implemented during 7-13 September 2013. Recommendation is now under preparation.

Min Kush Site characterization (field missions, May and September). Analytical report will be submitted till the end of 2013

Concept for Kyrgyz National Monitoring Program was developed. Round Table to discuss draft of the document will be held during National workshop in Bishkek (4-7 November, 2013)

The results of IAEA in assisting UZ in analytical laboratories development was requested by EC in support EC Remediation project for Jangiabad and Charkessar
Tuyuk Suu. Gamma dose rate survey

Mill site and Tailings Gamma dose survey
Borehole drilling (samples, gamma dose rate profiling)
Water samples (river and mine water)
Aerosol, soils, bottom sediment, plants
<table>
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<tr>
<th>TP-3 relocated to TP-6</th>
<th>New cover was established</th>
<th>TP-18,8,28 TP-5 are remained (drainages)</th>
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</table>

Waste rock piles at Kara Agach were covered, Remedial actions at the Alyampa Say River were not successful
### Preliminary Findings

**Overall site management and site remediation strategies to be developed**

Site specific monitoring program to be established and funded by Government

Long-term solution is to relocate most of remained tailings (Alyampa Say and other) to TP-15 (10 km away of Mailuu Suu in a mountain. Transportation options is a challenge

One of the possible solution to collect all small remained tailing dumps and put back tailings materials to

Water supply and water sewage to be restored

Monitoring system to be developed

Site management program to be established

Long-term social development program needed

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<tr>
<th>Station</th>
<th>Gross beta</th>
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<tbody>
<tr>
<td>Station 28</td>
<td>0,36± 0,11</td>
<td>0,15±0,045</td>
</tr>
<tr>
<td>Seepage TP-5</td>
<td>50,1± 15,0</td>
<td>230± 68</td>
</tr>
<tr>
<td>Station 34</td>
<td>0,83±0,25</td>
<td>0,32±0,1</td>
</tr>
</tbody>
</table>
Objective 3: Promote harmonization and implementation of regulatory frameworks

- **Action 3A:** IAEA will develop and distribute to CGULS members a ‘best practices’ document summarizing key characteristics of comprehensive regulatory frameworks relevant to ULS.

- **Action 3B:** MS will provide existing regulatory framework documents to be posted on CONNECT.

- **Action 3C:** Review Regulatory Framework Summaries provided by EC and EurAsEC. EC and EurAsEC will provide to CGULS members the results of ongoing and planned surveys of the existing regulatory frameworks in CGULS MS.

- **Action 3D:** Establish a regulatory framework working group for influencing implementation of MS regulatory frameworks over time.

The Best practice in development and Application of Regulatory process in Remediation Planning and Legacy Site Management will be disseminated via CGULS platform (IAEA CONNECT)
Regulatory frame for Remediation Preparedness (1)  

Requirements

General

Purpose, definitions, scope

• General Responsibilities (Regulators and Operators)
• General Principles (Site management, Remediation Options, Safety & Radiation Protection)
• Safety Assessment, Environment Impact Assessment, Remediation Planning (Site characterization, Monitoring and Surveillance, Radiation Protection Plan, Radioactive discharges, Clearance of materials)

Detailed requirements to be adopted in MS for:

• Exposure Assessment, Procedure for Remediation Strategies Planning
• Procedures and methods for site specific Hazards and Risk assessment
• Responsibilities and contents for reviewing process and Data management
• Licensing process and license contents
• (staff qualifications, site management profile, responsible parties for radiological surveys and radiation protections etc.)
Regulatory frame for Remediation Preparedness (2)

Regulatory guidelines

**Principle and Criteria** (dose criteria, remediation end-state criteria, land use aspects, justification and optimization principles, derived criteria)

**Development of Remediation Plan** (Standard content and procedure for development, reviewing of documents. This Plan should include consideration for Preparedness Phase, Planning Phase, Implementation and Completion Activities)

**Development of Radiation Protection Plan** (qualification and responsibilities of personnel, training requirements, identification of radiation hazards, dose assessment, reference and action levels, personnel radiation protection, personnel protective equipment, QA/QC procedures, decontamination, waste management, records keeping, emergency response et sat.)

**Site characterization** (site conceptual model, historical aspects, inventory, environment baseline information, ecotoxicology, non-radiological factors and consideration - social, economical, data records)

**Monitoring and Surveillance** (program planning, implementation, hazards inspection, data analyses and interpretation, QA/QC, reporting and dissemination)

**Integrated EIA and SA** (procedures, models, scenarios, uncertainties, risks)

**Waste management** (categorization, criteria, clearance, re-use and recycling, disposal)

Qualification of Personnel, Site management

Contents and conditions for efficient Licensing (Permits)
Remediation Process

Contamination & Hazards Discovered

Step-1: Initial Hazards Characterization

Step-2: Initial Safety & EI Assessment

Step-3: Prioritization of the facilities and area as a candidate for Remediation

Step-4: Concept and Strategy Development,

Prepare and submit Remedial Action Plan, including Radiation Protection,
Waste Management and preliminary cost assessment (selected facilities and strategies) for review and approval

Step-5: Remedial Action Plan Implementation

Step-6: Completion Report forwarded to Regulator, Statement that no further remedial action is required

Step-7: Long-Term Institutional Control

Legal & Regulatory Framework exist

ULS Operator established, staff skilled, Licensed

End-State Conditions, Remediation objectives Safety criteria approved

Guidelines to meet regulatory requirements, Clearance and design Criteria adopted

Detailed Remediation Plan approved. Funds available. Mechanism for Funding is established. Local Project Managers and Executing Companies are ready

Review process is clear, Regulator and Operator are ready for LTSM

Site Specific Monitoring and Surveillance Program to be in place

Additional Site investigation & Detailed Safety Assessment if appropriated
Objective 4: Promote awareness, understanding, and capacity development of stakeholders in support of remediation actions

- **Action 4A**: UNDP/ENVSEC will convene workshops in national/provincial capitals or field sites aimed at facilitating consultation of relevant organizations and national partners in stakeholder engagement for discussion of approaches and agreement upon division of labor.

- IAEA will support Action 4 relevant activities with dissemination of the materials, IAEA documents, and promoting the actions and results, including Best Practice experience.
THANK you for participation

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