60 Years

IAEA Atoms for Peace and Development

The Experience of the IAEA in Assisting its Member States in Implementing Remediation Projects

Horst Monken-Fernandes

Waste Technology Section - NEFW

Background

- Environmental Remediation
  - *Any measures that may be carried out to* ***reduce the radiation exposure*** *from existing contamination of land areas through actions applied to the contamination itself (the source) or to the exposure pathways to humans [IAEA Safety Glossary]*
  - Concerned with reducing existing radiation exposure from contaminated lands (soil and groundwater) that results from past activities involving the use of radioactive materials for civil or military purposes

Variety of situations

- Radioactively contaminated research and defence sites
- Uranium mining and milling sites
- Lands affected by nuclear or radiological accidents
- Nuclear weapon test sites
- Former waste storage sites
- Sites contaminated by activities involving the processing of naturally occurring radioactive materials **(NORM)**

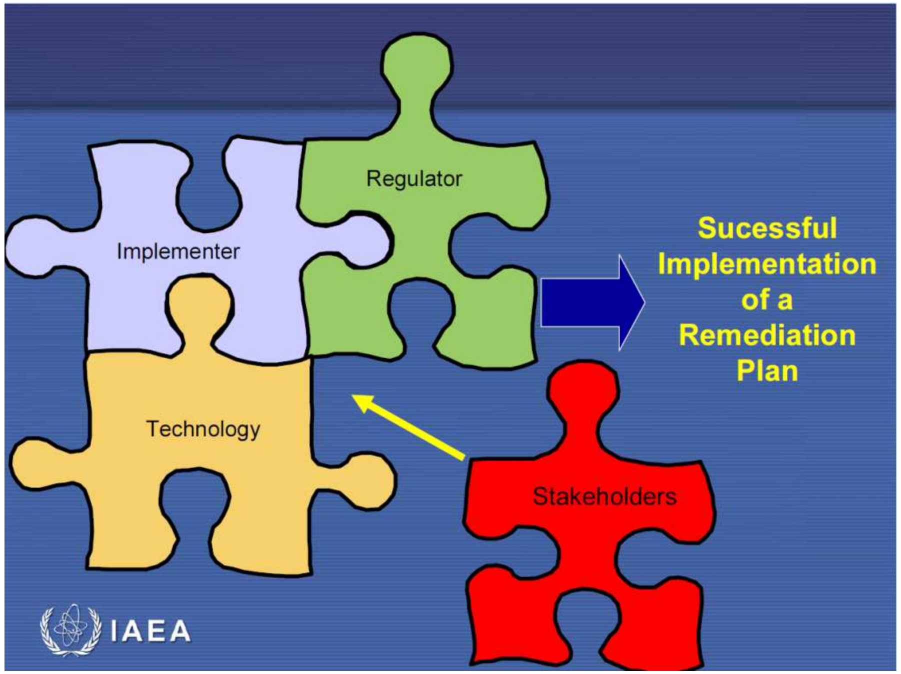
Tailings Pile in Central Asia

Waste dump # 366 in 1994 and 2004
Courtesy: Wismut GmbH

Key Aspects for Remediation

- Policy and National Regulatory Framework
- Stakeholder Involvement
- National Prioritized Remediation Strategy
- Site-specific characterization and environmental assessments
- Planning
    - Cost Estimate, Procurement, Contracting, etc.
- Engineering design for remedial solution
- Implementation of Remediation
- Verification of Remediation
- Post-Remediation Maintenance and Monitoring (Long-Term Stewardship)

- MS's will eventually have in place a proper infrastructure and technologies for managing their radioactive legacies and resolve all related issues in a **timely, safe and cost-effective manner**.



The Madrid Conference – What did it tell us?

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- Share and review challenges, achievements and lessons learned during the past decade.
- Identify mechanisms that can facilitate the implementation of these activities, especially wherever they are moving at a slow pace or are virtually stagnant
- Raise awareness of the importance of addressing the legacies from past activities

Topics

- National policies and strategies to enable and enhance D&ER;
- Regulatory framework and standards;
- Decision making process: societal and stakeholder involvement during the lifecycle of programmes;
- Technical and technological aspects (including technology and innovation needs);
- Waste management in D&ER ;
- Project management, skills and supply chain considerations;
- International cooperation.

Highlights (1/2)

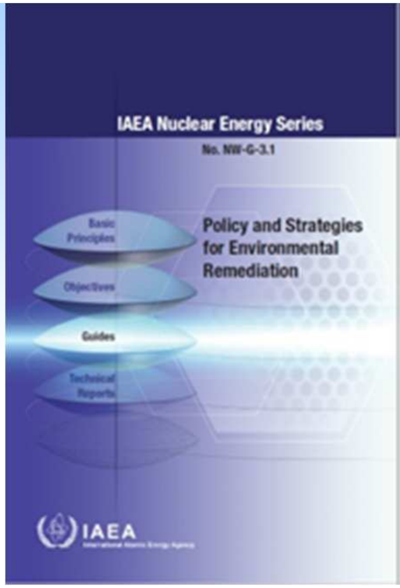
- The conference urged governments to establish **national policies and related strategies for D&ER** with a strong presumption against passing responsibilities to future generations;
- Special efforts are needed to provide **financing mechanisms to support the implementation of D&ER** programmes in States lacking necessary resources
- The conference recommended that States **apply holistic approaches to the management of waste from D&ER**, requiring an integrated approach to strategic decisions involving decommissioning and/or environmental/remediation and the associated management of radioactive and other toxic waste and the development of waste disposal facilities;
- The Conference further recommended that additional consideration be given to establishing **international guidelines for post-accident recovery and reference levels**;
- The conference recommended that States develop and implement decommissioning and environmental remediation policies and related frameworks that clearly allow and **facilitate stakeholder engagement in decision** making, and that the legal and regulatory framework for decommissioning and environmental remediation specifically identify key points in the process for stakeholder participation. It was suggested that the international community should develop guidance on how to engage stakeholders in such decisions.

Highlights (2/2)

- The conference recommended that greater efforts be made at international level to achieve **coordination of research and development activities** related to D&ER;
- The Conference encouraged the IAEA to proceed with (and eventually enhance) existing commitments to **facilitate the sharing and exchanging of knowledge and experience** and to explore additional mechanisms to **build capacity** in its Member States to allow them to use of technologies that will facilitate implementation of remediation projects in a sustainable manner;
- **Publically accessible databases** should be encouraged to promote lessons learned and to provide wide availability of experiences of technology application;
- The conference recommended that the international community should develop **guidance on the management of project risks** in D&ER programmes, including opportunities for sharing information on good practice on this issue
- The conference recommended that greater efforts be made at international level to **develop training opportunities for young professionals** working on D&ER

Policy and Strategy

- National legal framework and institutional resources
- **Inventory of potential sites for remediation**
- Allocation of responsibilities and provision o f resources
- Public Information and Participation
- Waste Management (including disposal routes

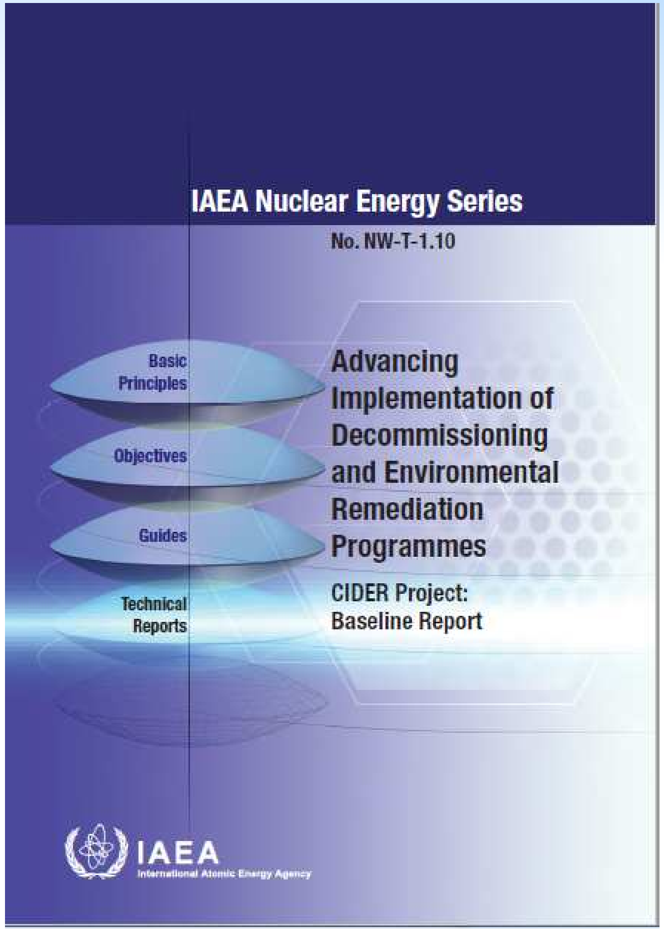


What is IAEA doing about it?

EVIRONET + IDN CIDER Project – Phase II

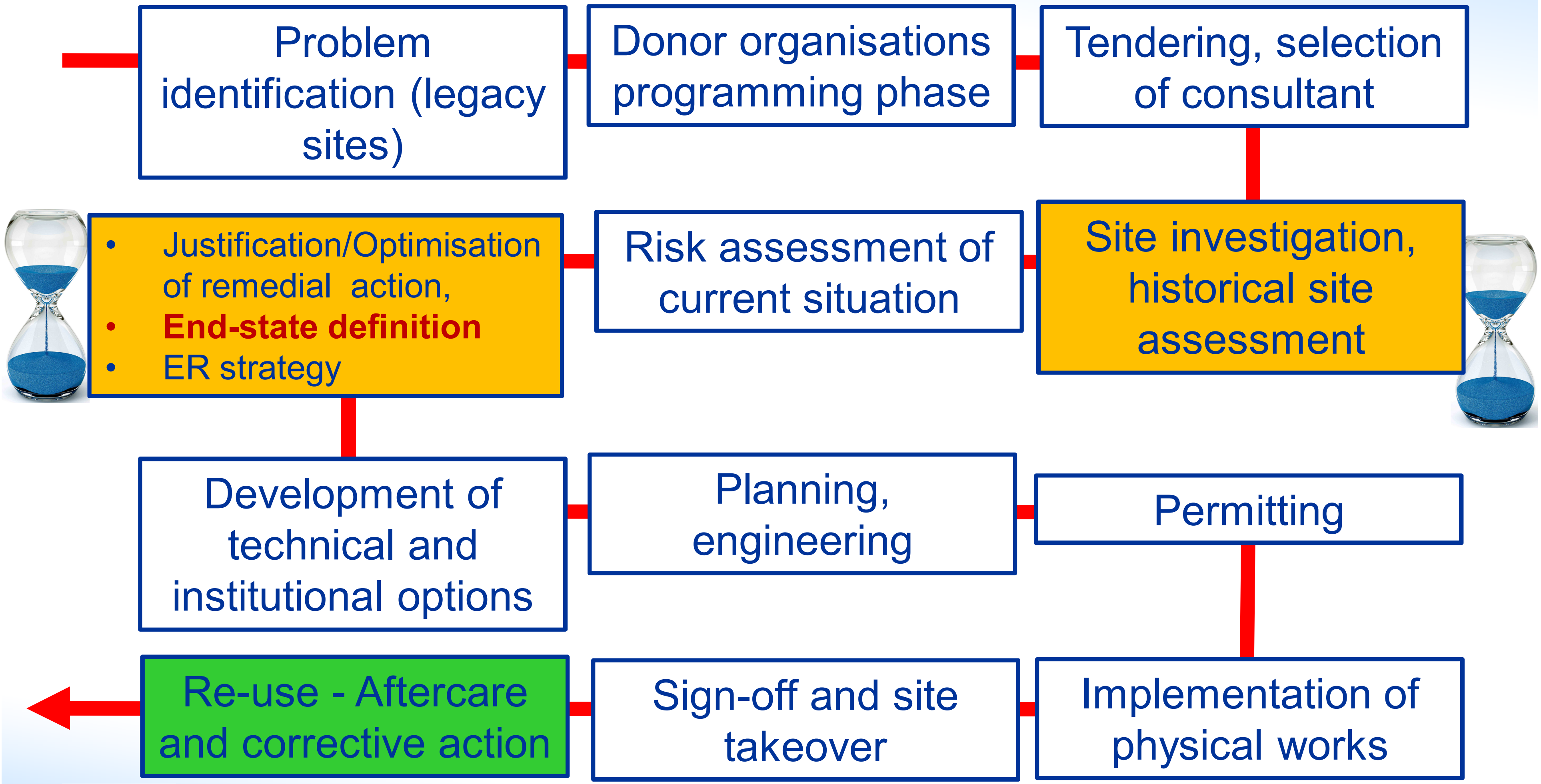
(Constraint in Decommissioning and Environmental Remediation)

- Policy and Strategy for D&ER Support
- Stakeholder Support Service
- Global Inventory of Sites
- Capacity Building – School of Environmental Remediation



The overarching objective of the CIDER Phase II project is to **enable dynamic support to facilitate MS D&ER programme implementation**, as well as further raise awareness on the importance and urgency for action, as well as to contribute to **improved efficiency and effectiveness** of D&ER programmes

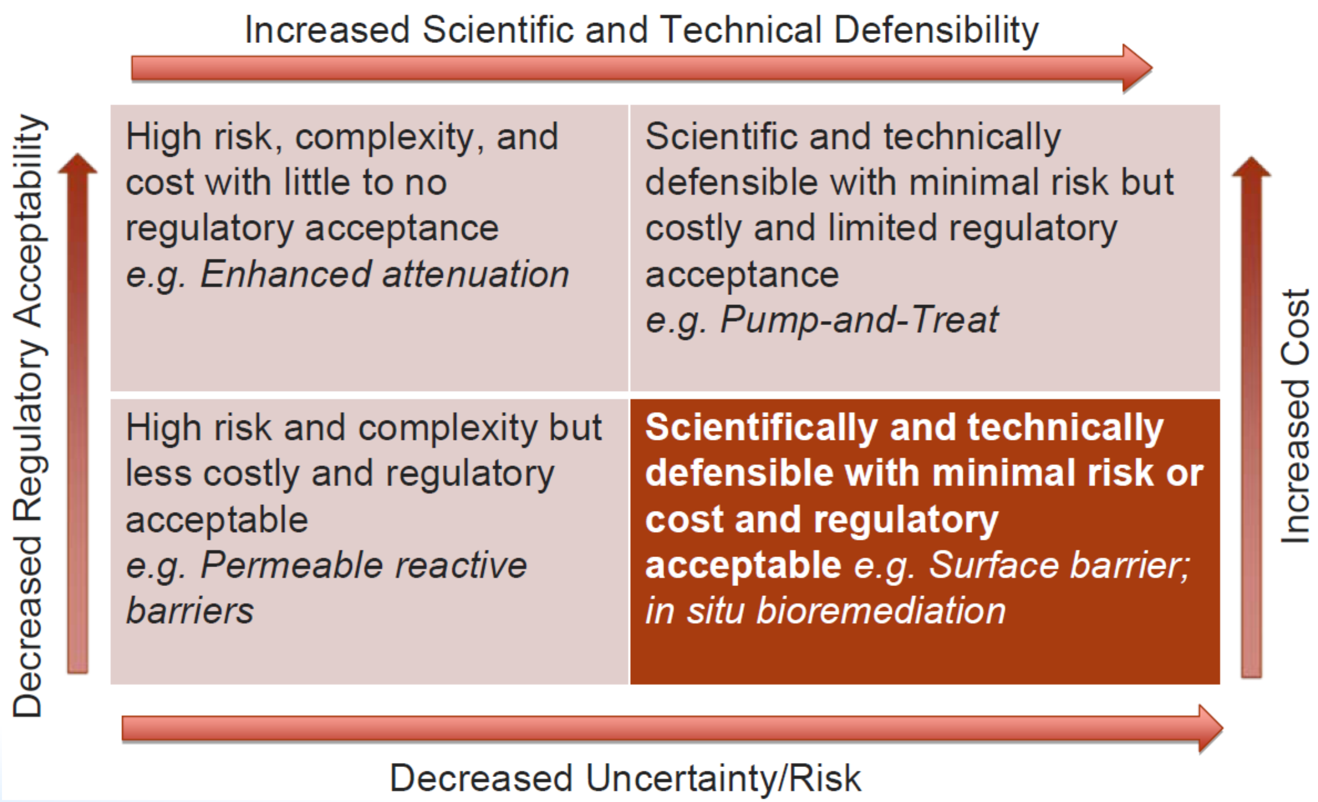
Overall ER project lifecycle and critical steps



From C. Kunze, 2015

What is an acceptable End State?

- Trade-offs must be carefully considered among the competing influences of cost, scientific defensibility, and the amount of acceptable uncertainty in meeting remediation decision objectives



Challenges, Key Issues and Opportunities in Site End-State Determination

Challenges	Key Issues	Opportunities
Scientific and Technical	Understand the nature and magnitude of problems to determine which risks are most critical and establish priorities for remediation needs and closure requirements	• Systems-based Approaches for Remediation and Decision Support • Characterization vs. Predictive Understanding (e.g. mass flux based conceptual models) • Technologies vs. Remedial Strategies • Point source vs. Systems-based Monitoring • Active/Passive Remediation Efforts–Transition and Exit Strategies.
Regulatory	Based on scientific and technical understanding, determine what must be accomplished through cleanup efforts	• Risk-informed definition of regulatory requirements • Priorities based on protection of human health and the environment
Institutional and Closure Management	Define what end state or condition would constitute progress or completion of cleanup	• Process to effectively define end states from scientifically and technically defensible understanding • Clearly defined and credible cleanup scope of work to achieve risk-based end states • Transition complex sites to LTM or MNA
Budget and Resource Allocation	Allocate limited resources (i.e., federal budget dollars) to provide benefit to society (e.g., reduced risk, recovered resources, etc.)	• Risk-informed choices to prioritize resources, drive 'cleanup demand' and complete site cleanup

Risk-Based Alternative End Point Strategies for Site Closure and/or Long-Term Management

Technically-based approaches to achieve alternative end point strategies, which are risk-based, cost-effective, sustainable, and protective of public health and environment

What is IAEA doing about it?

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ENVIRONET - DERES Project

Definition of Environmental Remediation End-States

Technical Meeting in Vienna June - 2016

1. Raising awareness of the importance of a consistent determination of End States for the ultimate success and sustainability of ER efforts
2. Raising awareness of the long-term requirements [institutional] control to ensure use restrictions are effective
3. Gain an overview of the international state-of-the-art in End State selection
4. Provide participants with the **tools and approaches to determine and reach consensus on End States** through a decision making process and make sure these tools and approaches are of practical relevance and applicability
5. Where appropriate, provide suggestions to improve existing guidance documents of the IAEA to include the determination of End State.

Site Characterization

https://frtr.gov/site/analysismatrix.html

	Media							Applicable To							
	Soil / Sediment	Water	Gas / Air	Selectivity	Susceptibility to Interference	Detection Limits	Turn Around Time per Sample	Screen / Identify	Characterize / Quantify	Cleanup Performance	Long Term Monitoring	Quantitative Data Capability	Technology Status	Certification / Validation	Relative Cost per Analysis
8.1 *IN-SITU* ANALYSIS															
8.1.1 Gamma Radiation	■	■	■	■	■	■	■	■	■	■	■	Δ	I	No	■
8.2 *EX-SITU* ANALYSIS															
8.2.1 *Radiation Detectors*	■	■	■	●	■	●	■	■	■	■	■	■	III	No	■
8.2.2 Gamma Ray Spectrometry	■	■	■	■	■	●	■	■	■	■	■	●	III	No	Δ
8.2.3 Nuclear Magnetic Resonance	■	■	■	■	●	Δ	■	■	■	■	■	Δ	I	No	●
8.2.4 Piezocone Magnetic Meter	■	■	■	Δ	Δ	●	■	■	●	■	●	●	I	No	■
8.2.5 *Field Bioassessment*	■	■	■	Δ	Δ	NA	Δ	■	■	Δ	●	Δ	II	No	Δ
8.2.6 Toxicity Tests	■	■	■	Δ	Δ	NA	●	■	■	Δ	■	●	II	No	■

Media and/or Applicable To	■	Better	●	Adequate	Δ	Serviceable
	NA	Not applicable	E	Requires selection of extraction procedure		
Selectivity	■	Measures the specific contaminant directly	●	Measures the contaminant indirectly	Δ	Measures a part of the compound
Susceptibility to Interference	■	Low	●	Medium	Δ	High
Detection Limits	■	Low: 100-1000 ppb (soil); 1-50 ppb (water)	●	Midrange: 10-100ppm (soil); 0.5-10ppm (water)	Δ	High: 500+ ppm (soil); 100+ ppm (water)
	NA	Not Applicable				
Turn Around Time per Sample	■	Minutes	●	Hours	Δ	More than a day
Quantitative Data Capability	■	Produces Quantitative Data	●	Data is quantitative with additional effort	Δ	Does not produce Quantitative data
Technology Status	III	Commercially available and routinely used field technology				
	II	Commercially available technology with moderate field experience				
	I	Commercially available technology with limited field experience				
Certification / validation	Yes	Technology has participated in CalEPA certification and/or CSCT verification program				
	No	Technology has not participated in CalEPA certification and/or CSCT verification program				
Relative Cost per Analysis	■	Least expensive	●	Mid-range expensive	Δ	Most expensive

What is IAEA doing about it?

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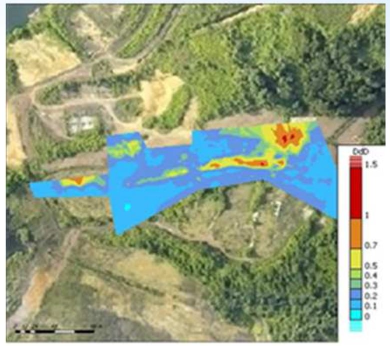
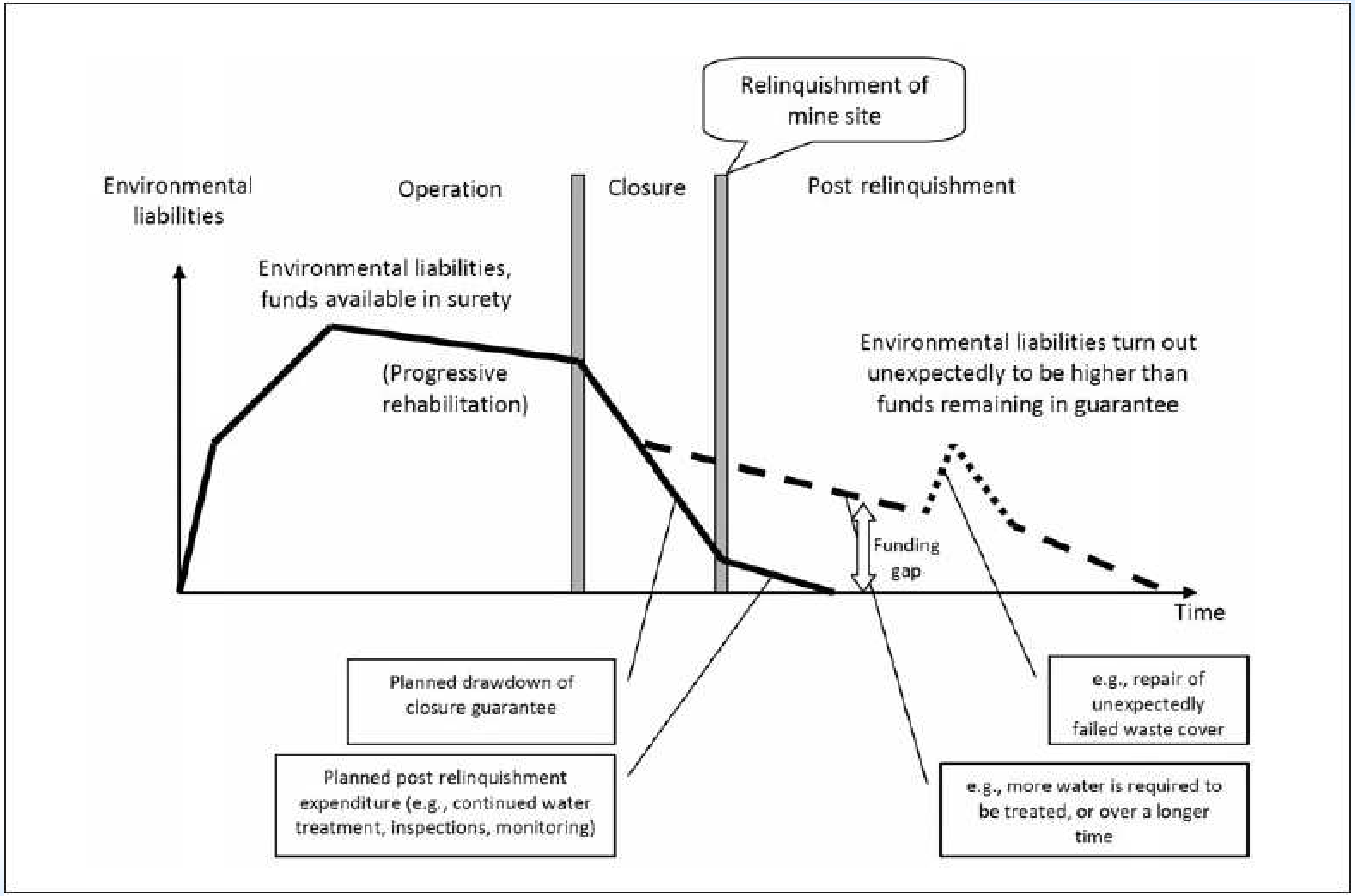
- **Mobile Unit for Site Characterization**
  - It consists of a **deployable team** of technical experts equipped with portable characterization instruments
  - Aimed at supporting efforts of MS's challenged with the need to characterize contaminated sites in the scope of ER projects by engaging with local authorities to **build their capacities via relevant trainings, workshops and technology demonstrations**
  - **Field equipment integrated with GNSS** and a data logger systems connected via a wireless network allow for automatic synchronization between the data collected and the time and location of the measurements
  - Missions already implemented in Zambia (Copper Mine and Smelter Sites); Azerbaijan (2 sites contaminated with charcoal containing Ra-226; Kyrgyzstan (uranium tailings); Kenya, Argentina and Gabon (remediated uranium mining site)
  - The Mobile Unit for Site Characterization is **supported by e-learning content** hosted in the CONNECT Platform.



Typical development of environmental liabilities of a mining project



From: C. Kunze, CIM Journal, Vol. 4, No. 4

What is IAEA doing about it?

Dedicated Publications
NE-Series Reports

- Contracting in Decommissioning and Environmental Remediation
- Cost Estimation of Environmental Remediation Projects
- Financing Approaches to Environmental Remediation Projects

Step 1: Estimation Activities and Schedules

- Identify Project Goals
- Develop Cost Estimating Plan
- Determine Work Tasks and Estimating Structure

Step 2: Estimate Quantities and Unit Costs – Point Estimates

- Estimate Quantities
- Estimate Unit Costs
- Adjust Unit Costs
- Escalate Costs Where Appropriate
- Determine Direct Costs

Step 3 Life-Cycle Analysis

- Determine Period of Analysis
- Calculate the cash flows for Each Year of the Project
- Select a Discount Rate to Use in the Present-Value Calculation

Step 4 Risk Factor Analysis

- Identify Sources of Uncertainty
- Account for Uncertainty in Cost Estimate

Step 5 Independent Review and Verification

When is an in-situ disposal approach appropriate in ER?

- Is it sensible to excavate the material and transport it for disposal elsewhere if the risk it poses is very low?(Optimisation)
- What concentrations of radioactivity could remain in-situ and meet the relevant safety targets? (Proportionate management)
- Clean up to next use rather than any use? Need to define **end-state**

What is IAEA doing about it?

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Remediation of Legacy Trench Disposal Sites

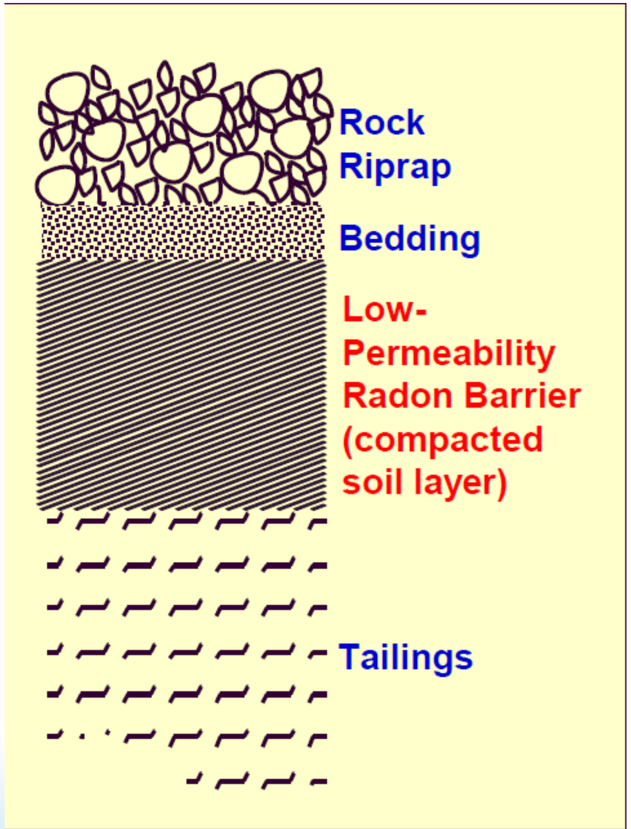
ENVIRONET - LeTrench Project

- Ascertain and document the world-wide extent of legacy trench sites and raise awareness of the issues associated with managing these sites;
- Facilitate the sharing and exchange of knowledge and experience among organizations with existing environmental management and remediation programs of legacy trench sites;
- Provide and coordinate support to organizations or MS's by making available the relevant skills and knowledge, as well as providing examples of technology applications, management approaches and expertise, related to environmental management and remediation of legacy trench sites;
- Contribute to long-term knowledge management of legacy trenches.

1st Technical Meeting Sellafield UK

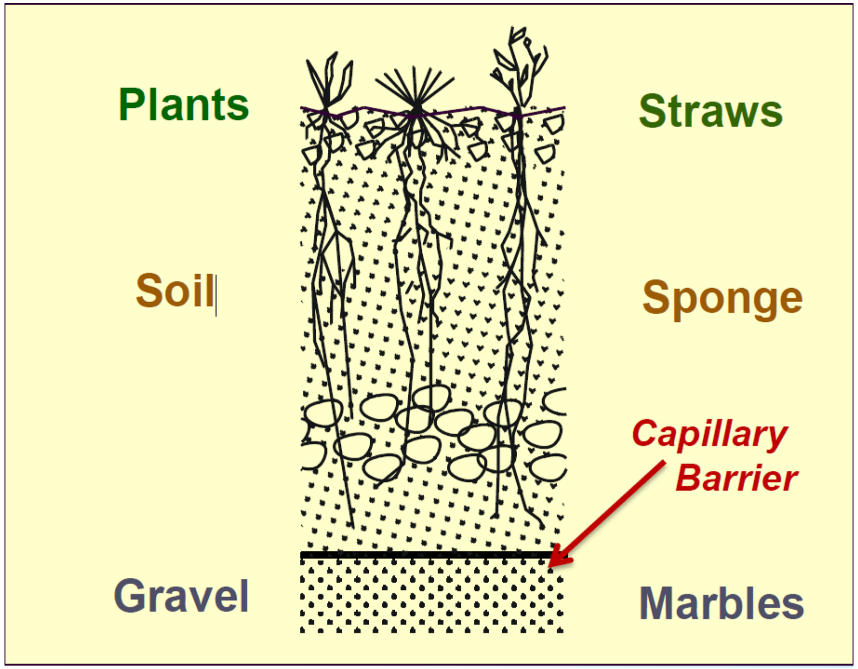
Technological Developments - Covers

Conventional Compacted-Soil Disposal Cell Cover Designs



Barrier Cover – Isolation

Alternative Disposal Cell Cover Design



Evapotranspiration (ET) or Water Balance Cover

W.J. Waugh, IAEA Madrid Conference 2016

Comparison of ET and Compacted-Soil Covers

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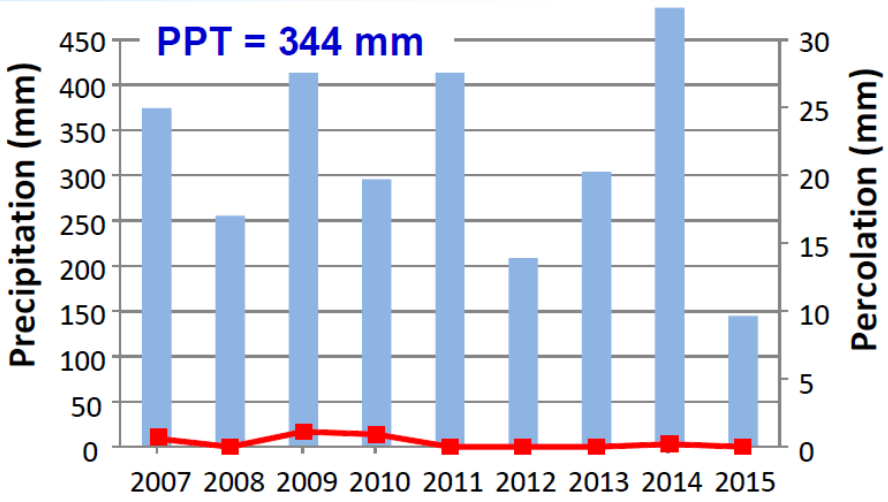
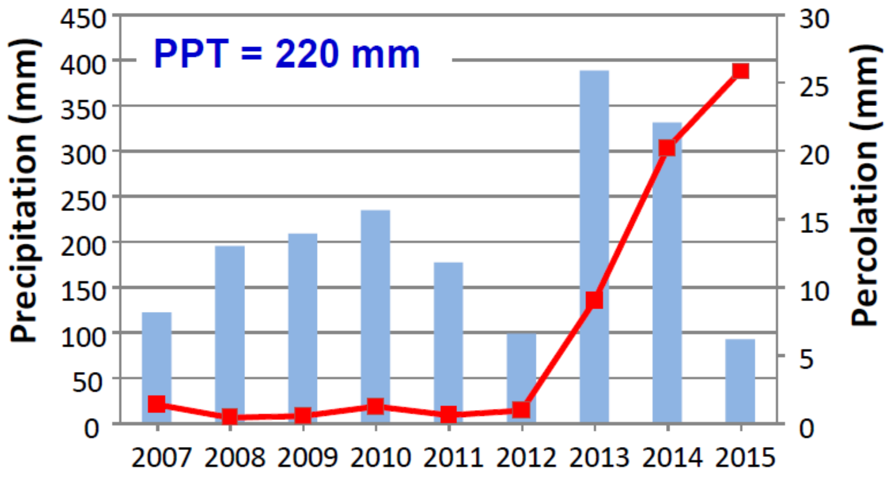
ET Cover Lysimeter
(Monticello, Utah)



Percolation < 0.1% of PPT

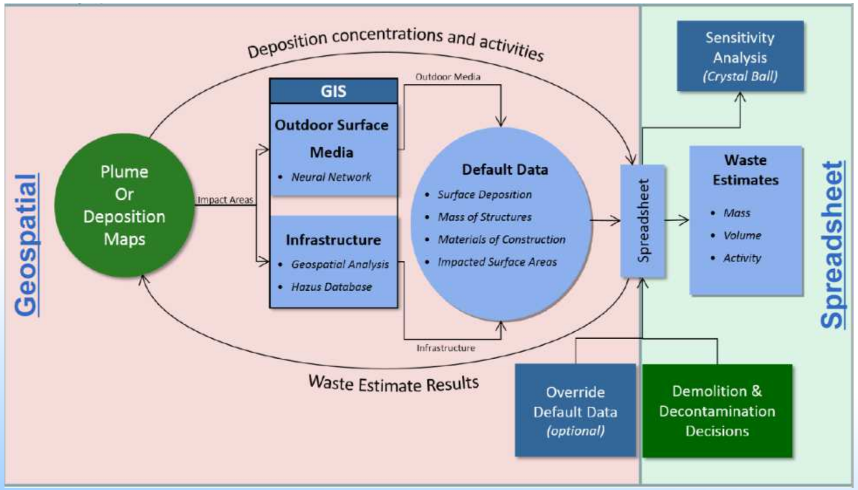
Conventional Compacted Soil Cover Lysimeter
(Grand Junction, Colorado)



Rising percolation caused by soil forming processes

W.J. Waugh, IAEA Madrid Conference 2016

RDD Scenario

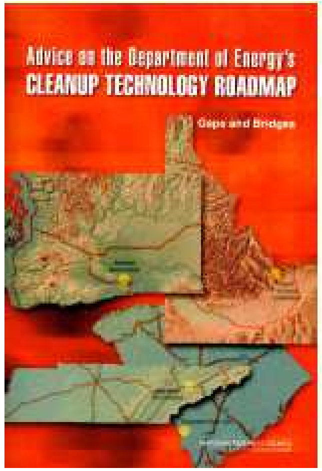


Waste Estimation Support Tool (WEST) Facilitates

- Radiological Dispersal Device (RDD) waste management issues linked with decontamination and restoration timeline
- Waste management decisions need to be made early
- First-order estimate of waste quantity and activity
- Pre-selection of disposal options
- ID of potential triage/staging/storage within each zone or surrounding area
- Assessment of impact of decontamination strategies on waste generation
- Assessment of impact of waste management strategies on decontamination decisions
- Identify starting points for waste management policy discussions

Development in Computational Tools Applied in Environmental Remediation

Report to Congress on the Status of EM Initiatives to Accelerate the Reduction of Environmental Risks and Challenges Posed by the Legacy of the Cold War (IAEA is quoted)

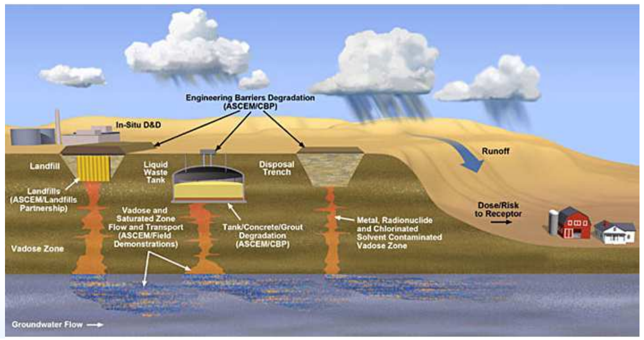


The report predicted (2009) that as EM/DOE addresses clean-up of more difficult sites, it would need continued scientific investments to understand the release, fate and transport of contaminants in the subsurface.

Many of the remaining waste sites are challenging because of the complexity and coupled nature of controlling hydrological, biological and geochemical processes and the wide range of scales over which they operate

Advanced Simulation Capabilities for Environmental Management (ASCEM)

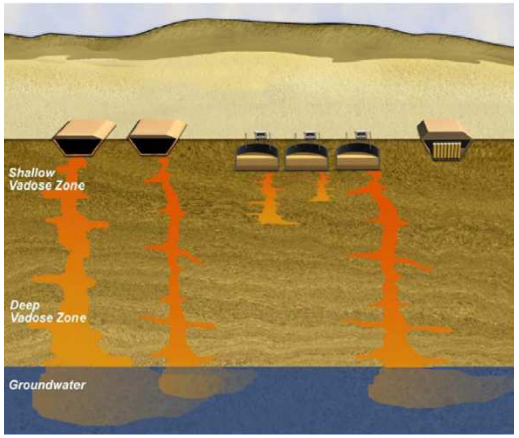
- Develop modular toolsets capable of accurately representing key aspects of complex engineered and subsurface environments to enable greater realism, enhance accuracy and agility, and improve uncertainty quantification.
- Implementing a graded approach to using current and future HPC toolsets to solve the most difficult EM challenges, appropriately matching the solution to the complexity of the problem.
- Provide a transformational capability to simulate coupled degradation, hydrological, geochemical and microbiological processes across EM's complex waste site environments.
- Implement formal uncertainty quantification and decision tools in a standardized framework to improve efficiency and consistency when approaching the diverse set of DOE-EM modelling problems.
- Improve EM's ability to evaluate and select more cost effective short and long-term remediation options to protect human health and the environment

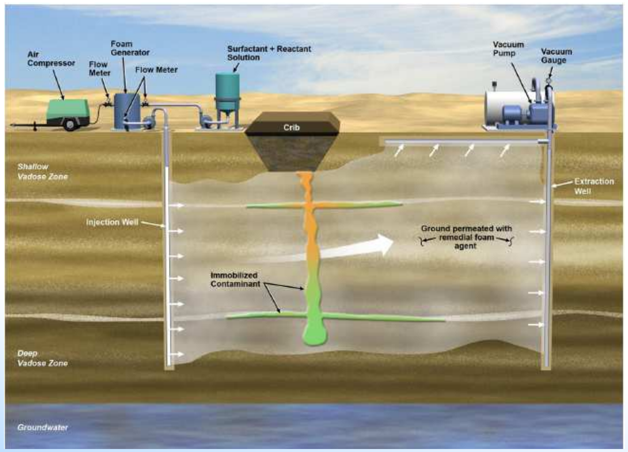


Transformational Concepts Advancing Environmental Remediation

From: “Advanced Remediation Methods for Metals and Radionuclides in the Vadose Zone”

Vadose Zone Contamination Impeding Site Closure



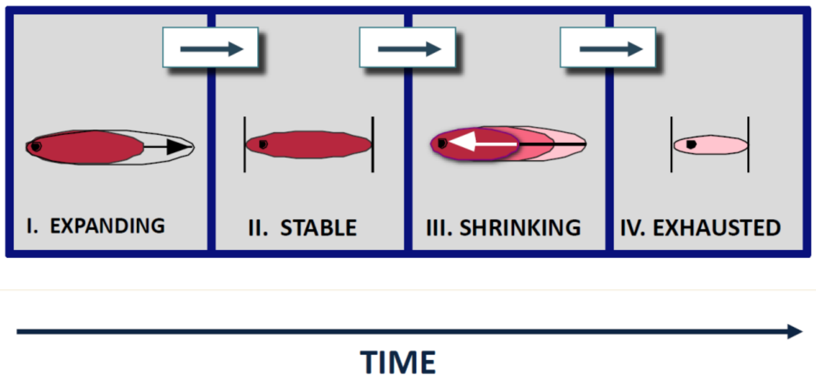


Why Advanced Remediation?

- The vadose zone is a source and primary conduit for metal and radionuclide (i.e., 99Tc, U, Cr, and 90Sr) contaminant transport from the ground surface to groundwater. Baseline remedial methods are highly constrained, costly, and inefficient for a deep vadose zone environment
- Physical removal methods such as **pump-and-treat or excavation are cost prohibitive, impractical, and ineffective for deep vadose zone environments**.
- Developing in situ remediation technologies and defensible remediation strategies for enhanced attenuation is the only feasible, cost-effective path to long-term stewardship of sites contaminated with metals and long-lived radionuclides

Groundwater Remediation

- There are situations for which active remediation to levels of free release is not feasible, either because the source is inaccessible or the contamination is dispersed over a wide area.
- Many former mining sites contain natural series nuclides at levels that are little more than background
- Similarly, the principal radionuclides in residues from a number of industrial processes are relatively short lived.



When MNA? When Not?

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SITES THAT ARE NOT WELL-SUITED FOR MNA

- Receptors impacted
- Increasing concentration trends w/ long timeframe
- Expanding plume (or imminent threat)
- Attenuation mechanisms poorly understood
- Geochemical conditions won't sustain attenuation
- Strong or uncontrolled source
- Monitoring limitations (can't ensure it's protective

SITES THAT ARE WELL-SUITED FOR MNA

- No receptors impacted
- Decreasing concentration trends w/ reasonable remediation timeframe
- Shrinking or stable plume
- Slow groundwater velocity (or long travel time
- Attenuation mechanisms have been established
- Geochemical conditions favour continued
- Attenuation
- Weak source

WHY USE MODELS?

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- Method for Predicting Something Precisely ? **No**

- System to Organize Site Data . . . . **Yes**
- Tool to Help Understand Site Processes . **Yes**
- Additional Line of Evidence . . . . **Yes**
- Screen for Applicability of MNA . . . . **Yes**

MONITORING REQUIREMENTS: KEY POINTS

- Short-term variability makes it harder to determine trend and increases the amount of monitoring needed to evaluate progress in remediation
- It commonly takes seven years or more of quarterly monitoring data to characterize the attenuation rate with even a medium level of accuracy
- Less frequent monitoring over longer periods of time may be more cost appropriate for determining trends during MNA

Challenges of MNA for Metals/Radionuclides

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- Significant site characterization
- Persistence in the subsurface
- Long-term immobilization
- Long-term monitoring
- Timeframes
- **Education and outreach efforts**

- Stakeholders want
  - Minimal exposure and acceptable risk
  - Usefulness of the site
  - Long-term monitoring, institutional controls
  - Well-defined contingency plan

Monitoring Optimization

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What are the trade-offs between monitoring frequency and time required for trend identification

Option	Sample Frequency	Total Sampling Events	Cost Per Well ($K)
Option 1:	Sample weekly for 1.6 years	82	123
Option 2:	Sample monthly for 2.7 years	33	49
Option 3:	Sample quarterly for 4.1 years	16	25
Option 4:	Sample semiannually for 5.0 years	10	15
Option 5:	Sample annually for 6.5 years	7	10
Option 6:	Sample every 2 years for 9.0 years	5	7
Option 7:	Sample every 5 years for 18.4 years	4	6

MNA in Summary

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- MNA is not a “no action” remedy, but rather a means of addressing contamination under a limited set of site circumstances where its use meets applicable statutory and regulatory requirements.
- MNA is not a “presumptive” or “default” remediation alternative, but rather should be evaluated
- and compared to other viable remediation methods (including innovative technologies) during the
- study phases leading to the selection of a remedy.
- The decision to implement MNA should include a comprehensive site characterization, risk assessment where appropriate, and measures to control sources.
- The progress of natural attenuation towards a site’s remediation objectives should be carefully monitored and compared with expectations to ensure that it will meet site remediation objectives within a timeframe that is reasonable compared to timeframes associated with other methods.
- Where MNA’s ability to meet these expectations is uncertain and based predominantly on predictive analyses, decision-makers should incorporate contingency measures into the remedy.

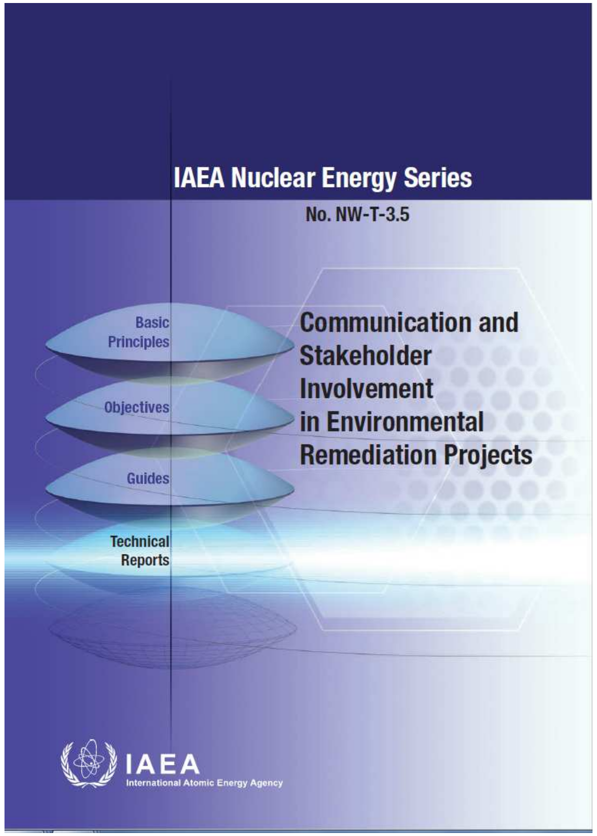
What is IAEA doing about these topics?

- Technical aspects related to the design of engineering containment barriers for environmental contamination
- Groundwater Remediation at Uranium Mining and Processing Sites
- Mathematical Models for Planning and Assessing the Performance of Remediation of Radioactively Contaminated Sites
- Chernobyl Cooling Pond Site Characterization and Safety Assessment as a Basis for its Decommissioning and Remediation Planning
- Cooperation with USEPA – IAEA – MoE/Japan to further develop a tool for waste estimation in ER projects (other MS's to be included)
- **Technology Review in Environmental Remediation (November 2016)**

Stakeholder related issues

Main Challenges

- Move from Decide → Communicate → Defend to Engagement in Decision Making
- How to do it?
- Need to bring together Social Scientists and Implementers (e.g. Engineers)
- Depends on Cultural, Political, Social Aspects
- "No one solution fits all"



Joint RICOMET – IAEA Meeting Vienna 27 – 30 June 2017

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RICOMET 2016

Risk perception, communication and ethics of exposures to ionising radiation

Public Declaration after the RICOMET Conference

Mol, August 2016

"In the evolution of nuclear science, technology and innovation, dialogue on social and ethical issues and stakeholder participation are paramount … complex radiological protection issues require: a transdisciplinary approach, integration of natural sciences with social sciences and humanities (SSH); informed decisions at all levels … sustainable decisions need to address stakeholder concerns visibly and transparently; the value and utility of bottom-up,… the need to develop attractive educational programmes related to ionising radiation for different publics; and the value of a self-sustainable SSH network.

The practical role of ethics, education and economics in decision making also needs further elaboration…"

Technical Cooperation Projects on Environmental Remediation

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- INT9183 - Overcoming the Barriers to Implementation of Decommissioning and Environmental Remediation Projects
- RER7006 - Ongoing Building Capacity for Developing and Implementing Integrated Programmes for Remediation of the Areas Affected by Uranium Mining
- TAD7002 - Ongoing Supporting Radon Monitoring of Uranium Tailings
- UKR9035 - Ongoing Rendering Assistance in Decommissioning and Radioactive Waste Management at the Chernobyl Nuclear Power Plant Onsite
- ZAM9010 - Assessing Radioactive Contamination of Surface, Groundwater and other Resources in Mining Areas

Capacity Building

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Module I

- **Radiation Protection Principles**
  - Common Radionuclides of Concern and their Characterisitics
  - Environmental Contamination - Fate and Transport Characteristics,
  - Environmental Statistics
  - Detection and measurements methods, dosimetry,
  - Biological effects of radiation,
  - Operational radiation protection,
  - Radiation protection of the public and the environment
  - Safety Guides and Legal/Regulatory Requirements
  - Policy and Strategies in ER

Module II

- **Project Planing and Management**
  - Conceptual Site Model Developement
  - Project Planning and Management
  - Cost Estimation
  - Financing
  - Project Executuion
  - Stakeholer Engagement
  - End-States and Future USe Determinations
  - Site Closure and Institutional Controls

Module III

- **Remediation Technologies**
  - Site Characterization -
  - Laborartorty nad Field Measurements Technologies
  - Remediation Options
  - Remediation Monitoring
  - Remediation of Groundwater
  - Use of Engineerd Barriers in Remediation Works
  - Other Remediation Tecchnologies

School of Environmental Remediation

Potential Partners

- CICE&T – Rosatom (Russian Federation)
- ANL – (USA)
- SCK-CEN (Belgium)
- Wismut GmbH (Germany)
- CEA (France)

Review Missions

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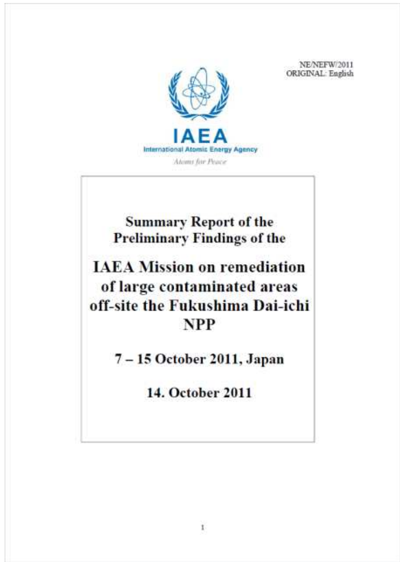
NE/NEFW/2011
ORIGINAL: English

IAEA
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Atoms for Peace

Summary Report of the Preliminary Findings of the

IAEA Mission on remediation of large contaminated areas off-site the Fukushima Dai-ichi NPP

7 – 15 October 2011, Japan

14. October 2011

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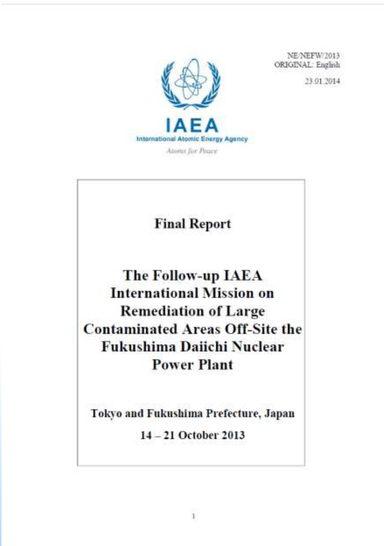
- Provide assistance to Japan in the plans to manage the remediation of large contaminated areas resulting from the accident at the Fukushima Dai-ichi NPP;
- Review remediation-related strategies, plans and works, including contamination mapping, currently undertaken by Japan; and
- Share its findings with the international community as lessons learned.


NE/NEFW/2013
ORIGINAL: English
23.01.2014

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Final Report

The Follow-up IAEA International Mission on Remediation of Large Contaminated Areas Off-Site the Fukushima Daiichi Nuclear Power Plant

Tokyo and Fukushima Prefecture, Japan

14 – 21 October 2013

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Regulatory Supervision of Legacy Sites (RSLS)

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- The overall objective is to promote effective and efficient regulatory supervision of legacy sites, consistent with the IAEA Fundamental Principles, Safety Standards and good international practices
- Collect, collate and exchange information on legacy sites.
- Generation of mutual support through presentations and discussions on how effective and efficient regulatory supervision can be implemented and maintained

Remediation of uranium legacy sites in Central Asia

Central Asia has been a centre of attention for international assistance programmes since the 1990s.

In 2009 and 2010, various conferences and meeting brought heightened attention to the problem of uranium legacy sites in Central Asia.

It was realized there was a need for much preparatory work to:

1. Strengthen the technical case for remediation of uranium legacy sites in Central Asia, and
2. Prepare bankable projects for remediation of uranium legacy sites in the region.

The 2010 Roadmap and CGULS

- In 2010, the IAEA Secretariat worked with the Member States in Central Asia to prepare a ***Baseline Document*** that served as the roadmap for much of the preparatory work done until now.
- By 2011 many organizations had become active in one aspect or another of remediation of uranium legacy sites in Central Asia and ***there was a pressing need for coordination*** of these efforts.
- Recognizing this need, the Agency formed **the Coordination Group for Uranium Legacy Sites (CGULS)** in June 2012.
- The IAEA Department of Nuclear Safety and Security, Division of Radiation Transport and Waste Safety, provides the secretariat for CGULS.

The Environmental Remediation Account

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- Recognizing that substantial funds would be required to remediate uranium legacy sites in Central Asia, the European Bank for Reconstruction and Development (EBRD) established the Environmental Remediation Account (ERA) in May of 2015.
- The ERA aims to provide funding for remediation of uranium legacy sites in the republics of Kyrgyzstan, Tajikistan and Uzbekistan.
- The EBRD plans to organize a high level donors conference for the ERA in late 2017 or early 2018.

The Strategic Master Plan

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Through CGULS, the Agency is preparing a ***Strategic Master Plan*** (SMP) for remediation of uranium legacy sites in Central Asia.

The SMP will provide a strategy for remediation of uranium legacy sites in Central Asia and will support EBRD's efforts to raise funds for the ERA.

For further information on CGULS, the SMP or the ERA contact:

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IAEA Department of Nuclear Safety and Security

Waste and Environmental Safety Section

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Thank you!