

Unlocking Societal Constraints in the Implementation of Environmental Remediation Projects

M. Martell, **H. Monken-Fernandes**,
T. Perko, P.O'Sullivan & N. Zeleznik

Merience, IAEA, SCK/CEN, REC/Slovenia



RICOMET 2016

Risk perception, communication and ethics of exposures to ionising radiation



IAEA

International Atomic Energy Agency

The IAEA

- Established in 1957 as the world's "Atoms for Peace" organization within the United Nations family
- Independent, intergovernmental, science and technology based
- Global focal point for nuclear cooperation
- 167 Member States
- 2,300 secretariat staff, based mostly in Vienna, Austria



The IAEA Statute

Functions – Promote peaceful uses of atomic energy

1. Promote research, development, practical application
2. Exchange of scientific and technical information
3. Exchange and training of scientists and experts
4. Establish and administer safeguards
5. Develop safety standards
and provide for their application

Environmental Remediation



IAEA

International Atomic Energy Agency

Why remediation?

- It is about reducing doses (exposure) to ionizing radiation
- Actions should be **justified** i.e. produce more good than harm
- The establishment of reference levels shall be done after process of **optimization**
- Taking care of the legacy of early stages of nuclear activities is a **moral/ethical obligation**
- Undue burdens should not be transferred to future generations
- MS's shall commit to resolving their legacy in a **timely, safe and cost-effective manner**
- International community has a role to play

Some Considerations about Remediation

→ providing a *remedy*?

(pharmaceutical product, cure or treatment)

→ ‘*cleanup*’ (making a place ‘clean’)?; ‘*rehabilitate*’?;
‘*restore*’?

→ measures to:

remove ‘*contamination*’ from land areas?, or

reduce radiation exposure?

Confusing term: '*Contamination*'

- from Latin *contaminat-*, *contaminare*, 'make impure',
from *tangere* 'to touch'
- Religious understanding (e.g., no-kosher food)
- Experts' denotation: presence of radioactivity
- Public's connotation: radiation dangerousness

Facts or purely public perception based on incomplete information?

- How does available information affect the views of people?
- How public perception will affect environmental remediation and decommissioning?

A Focus on Uranium Mining and Processing Facilities and Legacy Sites



IAEA

International Atomic Energy Agency

Four main groups of issues

(paper in preparation for the JER)

- Long term issues: uranium mines remain dangerous after closure
- Burden to indigenous people
- Influence of historical legacy sites and lack of regulatory regime
- Scientific evidence to propagate fear

Potential Exposures of Members of the Public



People use tailing dumps for grazing

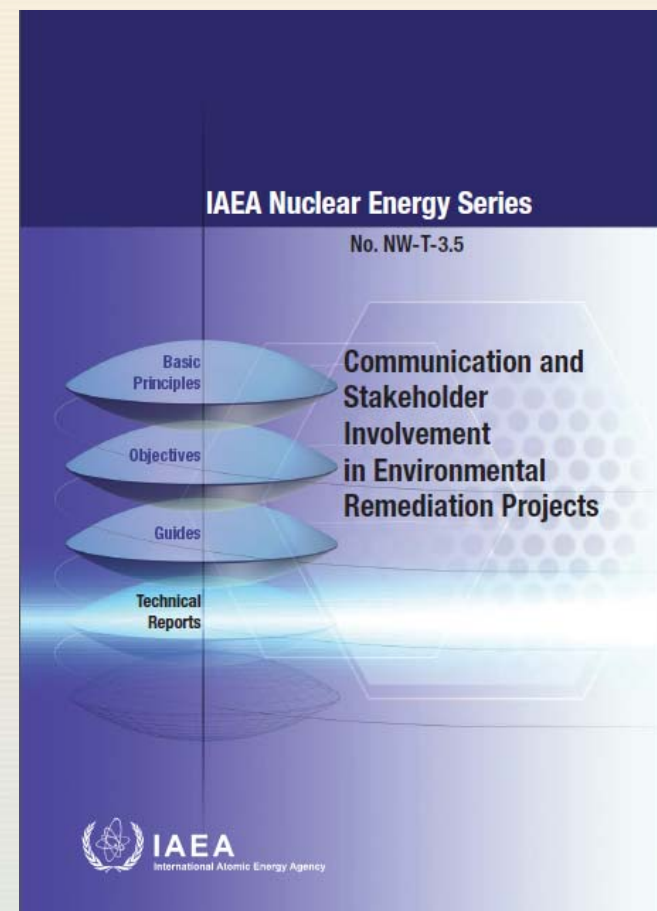
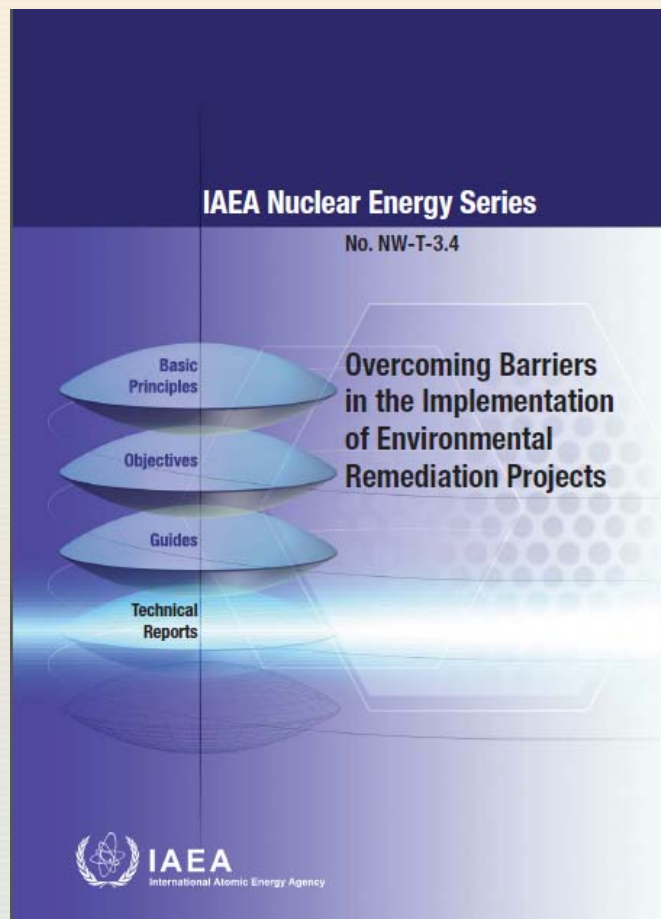


Local citizens destroyed the observational wells. Kadji-Say

Uranium mill tailings in Kyrgyzstan



How to facilitate the implementation of Environmental Remediation Projects?



CIDER project (1/2)

The IAEA CIDER project - first phase:

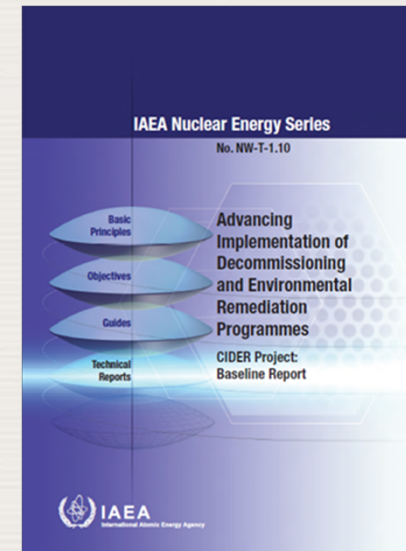
- launched in 2013 and finished in 2015;
- Identified **barriers** to implementing D&ER projects in:
 - i. national policy, legal, and regulatory framework
 - ii. financial constraints, including logistics, resources and management of available funds,
 - iii. technology and infrastructure impediments,
 - iv. **stakeholder issues** that need to be addressed and emphasized throughout the lifecycle of planning and implementing decommissioning and environmental remediation projects.
- provides **recommendations** on how to overcome such constraints, based on the experience gained from existing and past projects.

CIDER project (2/2)

- Common constraints for D&ER (survey results):
 - Lack of funding
 - Lack of infrastructure for waste management
 - Lack of technology (in countries with less advanced programmes)
 - Lack of regulatory framework
 - Lack of national policy
 - Lack of qualified personnel
 - **Stakeholder opinion /resistance**
 - **Uncertainty over the end state**

Societal constraints

- Limited technical knowledge and understanding of the issues and process
- Groups and individuals opposed to the programme
- Concerns related to the waste disposal on site
- Different demands and concerns between stakeholders
- Limited budget to cover stakeholders demands
- Negative experience with the D&ER programmes
- Lack of support by the governmental authorities to implement D&ER
- Changing the administrative procedure and legal framework related to D&ER programmes
- Lack of trust between stakeholders
- Lack of recognition of links between environmental, economic and social concerns



Moving things on the ground



IAEA

International Atomic Energy Agency

CIDER Phase II

- D&ER Strategy Support Working Group
- Capacity Building Working Group
- D&ER Inventory Development Working Group
- **Stakeholder Support Service Working Group**

Stakeholder Support Service Working Group

- Support to MS on stakeholder communication and engagement;
- Build capacity and case studies on effective stakeholder engagement in implementation of D&ER programmes;
- Platform for collaborative work to strengthen stakeholder engagement;
- Projects to demonstrate good practice;
- Facilitate a community of practice, through web-based system;
- Create simple and complex tools for use by missions (e.g. identification of stakeholder groups, social network analysis, structured decision making, etc.)

IAEA Conference on Decommissioning and Environmental Remediation (Ethical Appeal for Implementation)

Recommendations - Session 3 Stakeholder Communication & Involvement in Decision-Making Process



IAEA
International Atomic Energy Agency

Recommendations – Opportunities for engagement of experts in RICOMET

- Countries to develop and implement D&ER policies that clearly call for stakeholder engagement in decision-making
- Development of guidance on how to engage stakeholders in decision making for D&ER, including post-accident situations (establishment of reference levels, end-state, etc.)
- **IAEA should consider organizing a major international event on the different aspects of public communications and stakeholder engagement on nuclear related activities that would include D&ER issues**

Thank you



ANNEX

Long term issues: uranium mines remain dangerous after closure

- “One problem globally is the clean up and maintenance of sites. **Communities are often left to foot the bill**”;
- “Despite efforts made in cleaning up uranium sites, **significant problems stemming from the legacy of uranium development still exist today**”
- **Tailings dam all over the world have leakage problems and there are many documented instances of increased exposure to radiation in people living downstream from these tailings dams**

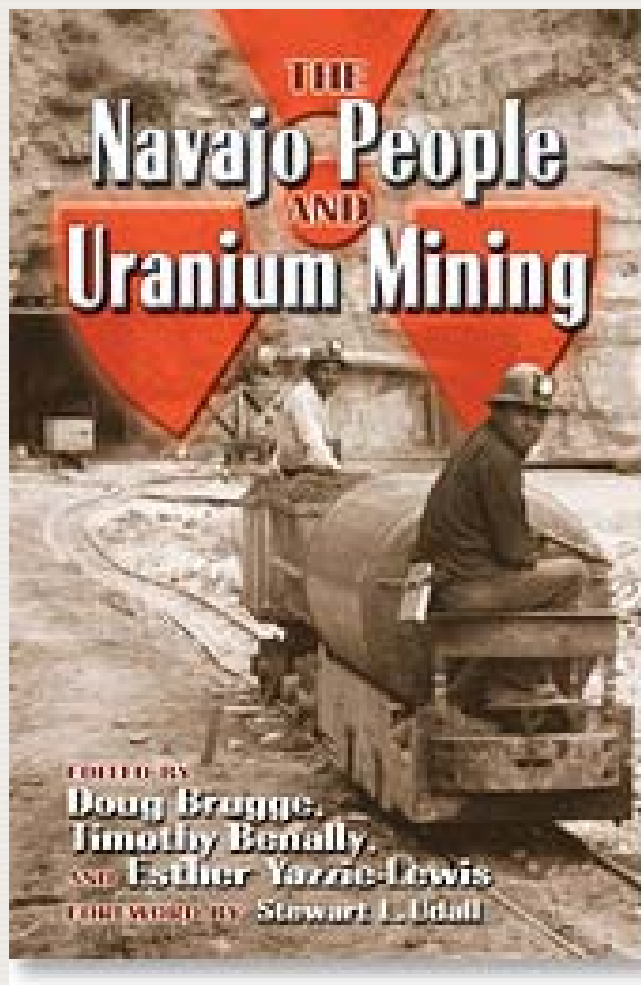
Burden to indigenous people (1/3)

- “**The burden** from the effects of uranium production, driven by a few countries seeking nuclear weapons and nuclear power, **has been disproportionately carried by indigenous, colonised and other dominated peoples**”
- “**Globally** the nuclear industry has a history of developing their operations on indigenous peoples’ land against their wishes”.

Burden to indigenous people (2/3)

- Claims that lack of infrastructure and investment in remote areas, has allowed **mining companies to pressure indigenous communities** to permit mining on their sacred lands in exchange for basic services like school and hospitals”
- Inequity of the burden to restore the environment” - “These communities don't have as many resources as urban centers do to clean up the pollution.”
- “Because of the location of the mines, there have been a disproportionate number of aboriginal workers as compared to those in other industries”

Burden to indigenous people (3/3)



- “Mining took place throughout the Navajo Nation, and there are at least one thousand abandoned and unreclaimed uranium mines within the Navajo Nation”.
- “The extent of toxic waste that came from the mills and plants that processed uranium and other products is still unknown”.
- “People talk about using Indian lands to store nuclear waste”.
- “What is the “peace dividend” for Navajo people?”

Influence of historical legacy sites and lack of regulatory regime

- In Canada there was no regulatory upper limit to radiation exposure for Canadian miners from 1940's until 1968.**
- The Soviet Union operated East German mines with no radiation protection measures until 1954; they continued to be a radioactive disaster area for decades.**

Scientific evidence to propagate fear (1/2)

- 4 out of 9 people screened had radioactive chemicals in their bones after living near a uranium processing facility
- Uranium mining creates risks to workers and communities through radioactive dust, radon released from different sources);
- Uranium enters the body by ingestion or inhalation of airborne uranium-containing dust particles or aerosols;

Scientific evidence to propagate fear (2/2)

- **Inhalation of radon and radon progeny lead to radiation exposure of the bronchial tissue of the lung with a resultant risk of cancer**
- **Residents living near uranium mining operations have a higher risk of genetic damage than people living further away;**
- **Workers exposed to uranium are at increased risk of various degrees of genetic damage**