



**IAEA**

International Atomic Energy Agency

# **Plans for IAEA International Conference Management of Naturally Occurring Radioactive Material (NORM) in Industry**

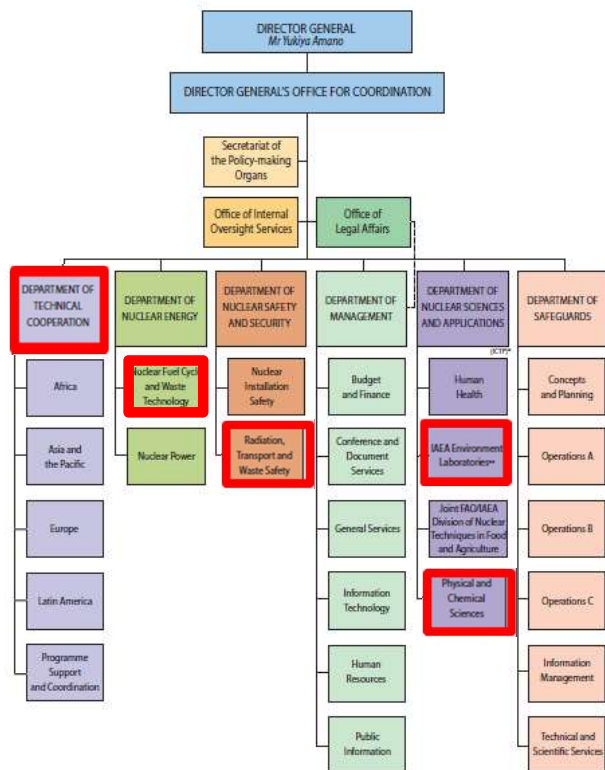
**Environet NORM Project  
Working Section During the NORM IX Symposium  
Denver, Colorado, USA  
23 September 2019**

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# The IAEA organisational Structure



## NORM related issues are dealt with in different sectors of the IAEA:

- Safety and Regulations – Nuclear Safety and Security Department
- Technological/Managerial Aspects – Nuclear Energy Department
- Instrumentation, Environmental Behaviour – Nuclear Sciences and Application Department
- Support to Member States (by means of national, regional and inter-regional projects) – Technical Cooperation Department

## Dealing with NORM imposes a series of challenges:

- Awareness
- Applicable Regulatory Infrastructure (requirements & enforcement)
- Radioactive Waste x Hazardous Waste (Policy)
- Sound management options (including availability of disposal sites – Strategies, Inventory, Cost related issues)
- Harmonization of approaches at the international level (transboundary issues)
- Public Perception

# Key Issues



- Harmonization remains a prospect rather than a reality → achieve a common and coherent approach to the regulation of NORM.
- Modelling x Assessment based on acquired data
- Still work to be done in Many Member States
- Need to have consistent involvement from Industry
- Application of Waste Management Hierarchy: Avoid, (Re)use, (Re)Cycle
  - Dilution → Acceptance Regulatory & Social
  - Clearance → Analytical capabilities
  - Disposal Routes → Landfill
  - Environmentally sustainable, socially acceptable and affordable solutions

## What are the Member States Saying? Summary of the Requests Placed by in Technical Cooperation Projects (1/2)



- Analytical Aspects:
  - Improvement and upgrade of the analytical and technical capabilities
- Safety and Regulatory
  - Design and implementation of monitoring programmes
  - Establishment of administrative and standard operating procedures and assessing possible NORM contamination and its impact to the workers and environment
  - Establishment of good operational practices in production in relation to the radiological safety of the workforce and the environment
  - Establishment of an appropriate regulatory framework associated with NORM industry operations

## What are the Member States Saying? Summary of the Requests Placed by in Technical Cooperation Projects (2/2)

- Establishment of a Policy and Strategy (P&S) for NORM Waste
- Identification of concepts in NORM waste management
- Training on the identification of NORM generating industries, NORM generation estimates, decontamination techniques, radon measurements and NORM waste treatment and storage
- Advice on plans for NORM disposal, techniques for conditioning and storage, long term storage design and cost (design + facilities + operations)
- Training on technical works required for waste treatment, storage, radiological measurements and disposal options
- Provide and discuss examples of procedures for decontamination, conditioning and pre-storage and calculation of the cost of disposal facilities
- Build regional capacities of specialists to carry out comprehensive NORM waste management options
- Remediation → Programme of action to minimize the impact of radioactive residues on populations and to create a favourable conditions for the sustainable development of the affected territories

# To be considered

- Waste Management
  - At the Policy Level
    - Adoption of the waste hierarchy principle
    - Waste management supply chain to develop management options
    - Remove barriers to the development of a robust and efficient market for waste management

# To be considered

- At strategic level
  - Secure – waste management options are available
  - Sustainable – the waste management options are safe
  - Resilient – NORM waste producers have access to a range of management options

# To be Considered – key aspects



- Clarity of regulatory regimes
- Identifying and removing policy barriers to the development of waste treatment and disposal facilities
- Need for good data and information about current and future waste arisings



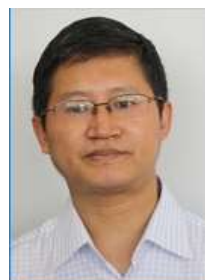
## Scientific Secretaries



Horst Monken-Fernandes  
NEFW

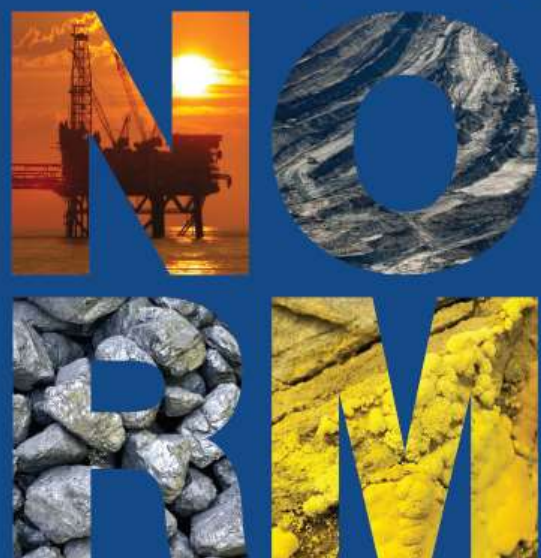


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International Conference on  
**Management of Naturally  
Occurring Radioactive  
Material (NORM) in Industry**



**19–23 October 2020  
Vienna, Austria**

 **IAEA**  
International Atomic Energy Agency

**#NORM2020**

09-2021

# Objectives of the Conference

- Foster the sharing of experiences in the management of NORM in industrial operations with the aim of contributing to the harmonization of approaches and adoption of good practices that are simultaneously cost effective and safe taking into consideration members of the public and workers.
- This new conference aims to explore the good practices that have been put in place worldwide and bring together different players to identify current issues and expected future challenges and possible strategies for dealing with them.
- Conference will consider the latest technological developments and research work, taking into account regulatory requirements and safety aspects.

# Expected Results



- Increased knowledge and raised awareness in Member States on technical aspects specific to Management of NORM residues/wastes to prevent the creation of new legacy sites requiring remediation, and management of existing legacy sites and wastes;
- Enhanced national capabilities to develop policies and strategies for NORM residue/waste management and remediation of legacy sites, and associated required infrastructure;
- Improved understanding of NORM institutional infrastructures (i.e., policy, strategy, regulation, laboratories, reuse options, storage and/or disposal facilities) and NORM inventories (i.e., NORM-generating industries and processes, residue/waste streams,

# Topics



- NORM Inventories
  - Identification of NORM-related industries operating within the country
  - Amounts of residues/wastes being generated
  - Radioactivity concentrations or exposure rates
  - Other hazardous materials of concern

# Topics



- National Policies and Strategies
  - Setup of waste management organization.
  - Centralized vs multiple dispersed facilities.
  - NORM-dedicated facilities vs facilities accepting multiple types of wastes.
  - Stakeholder involvement
  - Environmental impact assessment

# Topics



- NORM Characterization in Industrial Operations
  - Appropriate sampling and monitoring methodologies.
  - Analytical methodologies:
    - Laboratory measurements.
    - On site measurements (e.g. in situ measurements, mobile lab).
  - Infrastructure and equipment requirements.
  - Quality assurance and quality control.
  - Recordkeeping.

# Topics



- Residue and Waste Management
  - Life cycle management to help prevent environmental contamination.
  - Cost assessment across all aspects of residue/waste management.
  - Management options for residues/wastes — application of the waste management hierarchy:
    - Prevention.
    - Minimization.
    - Reuse (i.e. using the NORM in its current form).
    - Recycle (i.e. reprocessing of the NORM into a new form), including NORM contaminated scrap metal.
    - Disposal.
  - Selection of management options, including reuse, recycle, storage, and disposal:
    - Justification and optimization:
      - Cost/benefit analysis.
      - Multi-criteria decision analysis.
  - Financial guarantees.
  - Other considerations (e.g. economic impacts).
  - Transportation requirements and controls.

# Topics



- Decommissioning of NORM Facilities and Remediation of Contaminated Sites
  - Decommissioning and waste management plan.
  - Decontamination technologies.
  - Dismantling technologies.
  - Remediation.
  - Identification of contaminated sites.
  - Conceptual site model.
  - Site characterization.
  - Remedial action evaluation and selection.
  - Costing and funding.
  - Long term stewardship of closed or decommissioned NORM management facilities/sites.
  - Institutional controls.



Looking forward to welcoming  
you in Vienna in 2020

*Thank you!*

