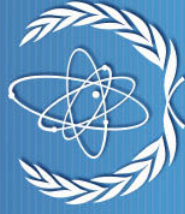


The EMRAS Programme and relevant issues of environmental radioactivity

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NSRW - WSS



IAEA

International Atomic Energy Agency

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Current EMRAS status

- Launched in September 2003 for 4 years (2003-2007).
- Three thematic areas:
 - *Radioactive release assessment;*
 - *Restoration of sites with radioactive residues;*
 - *Protection of the environment.*
- Seven Working Groups established and operated in 2003-2005.

EMRAS themes and tasks - 1

Theme 1: Radioactive Release Assessment

1. Revision of IAEA TRS No. 364, “Handbook of parameter values for the prediction of radionuclide transfer in temperate environments” .
2. Modelling of tritium and carbon-14 transfer to biota and man.
3. The Chernobyl ^{131}I release: model validation and assessment of the countermeasure effectiveness.
4. Model validation for radionuclide transport in the aquatic systems “Watershed-River” and estuaries.

EMRAS themes and tasks - 2

Theme 2: Remediation of Sites with Radioactive Residues

1. Modelling of naturally occurring radioactive materials (NORM) releases and of the remediation benefits for sites contaminated by extractive industries.
2. Remediation assessment for urban areas contaminated with dispersed radionuclides.

Theme 3: Protection of the Environment

1. Model validation for biota dose assessment

Expected EMRAS outputs:

- Review of modern scientific data used for environmental modelling of radionuclides
- Improvement of models and reduction of uncertainty in their predictions; thereby optimisation of public radiation protection
- Revision of important IAEA handbook TRS-364
- Publication of project reports



EMRAS officers – Theme 1

THEME 1

WG 1:
TRS 364

WG 2:
Tritium/¹⁴C

WG 3:
I-131

WG 4:
Aquatic

Working Group Leaders

Philippe Calmon
IRSN, France

Phil Davis
AECL, Canada

Pawel Krajewski
CLRP, Poland

Luigi Monte
ENEA, Italy

IAEA Scientific Secretaries

G. Voigt
(NAAL)

M. Balonov
(NSRW)

V. Berkovsky
(NSRW)

D. Telleria
(NSRW)



EMRAS officers – Themes 2 and 3

Theme 2		Theme 3
WG 1 NORM Remediation	WG 2 Urban Remediation	WG 1: Biota Dosimetry
Working Group Leaders		
Richard O'Brien Australia	Kathy Thiessen SENES, USA	Brenda Howard & Nick Beresford, LEC, UK
IAEA Scientific Secretaries		
Peter Waggitt (NSRW)	B. Batandjieva (NSRW)	Mikhail Balonov (NSRW)



IAEA

EMRAS *modus operandi*

- Annual Combined (Plenary&WG) meetings at IAEA, Vienna (mainly, in fall) accompanied with SC meetings
- Additional WG meetings elsewhere (mainly in spring/summer); more often if feasible
- EMRAS web-site created and news posted regularly: <http://www-ns.iaea.org/projects/emras/>
- Funding of meetings:
 - IAEA – very restricted
 - WG sponsors – most realistic approach. As for now, three groups have got some external funding

EMRAS near future

- Substantial enthusiasm of participants in 2003-2005 noticed
- Working Group Meetings in April – June 2006 in various countries
- 4th Combined Meeting - 6-10 November 2006 at IAEA HQs, Vienna
- EMRAS project is in its middle; time to start thinking about reporting.

Planning for the EMRAS reports

- General agreement – one report per WG
- Six reports in the Agency's TECDOC format
- One report (TRS-364 revision) – in the TRS or Safety Report format – to be decided
- Draft WG reports – by the last Combined meeting in autumn 2007
- First draft reports for discussion by WGs – spring 2007
- Template for scenario reports suggested by Phil Davis

Generic scenario report layout

1. Background and Objectives
 2. Summary of Scenario Description
 3. Observations (for scenarios based on experimental data)
 4. Model Description
 5. Modelling Results and Discussion
 6. Summary and Conclusions
- Appendix A – Scenario Description
 - Appendix B – Model Descriptions

Generic Model Description

1. Introduction
2. Key Assumptions
3. Modeling Approaches (conceptual and mathematical)
4. Parameter Values
5. Uncertainties
6. Application of the model to the scenario

Update on Environmental Radioactivity Issues



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Changing scene in discharge control: ICRP

ICRP is developing new basic recommendations to be completed in 2006:

- *No change of human dose limits for practice is being considered.*
- *Biota protection issues will be considered explicitly.*
- *More attention to be focused on compliance with dose constraints, not limits.*
- *Constrained optimisation remains the core methodology for establishing the discharge limitations.*
- *Optimisation process becomes less formal with regard to cost-benefit analysis.*
- *The critical group will be replaced with the 'representative individual'.*

National practices of discharge control

- *Not always follow constrained optimisation procedure for a critical group:*
 - *hypothetical persons located at the site boundary are considered as exposure subjects;*
 - *both cost-benefit analysis (CBA) and more flexible (MAA) are being used as the optimisation technique*
 - *best available technique (BAT) oriented on technological capabilities is being used.*
- *The diversity of national practices is being currently analysed by the IAEA aiming to account for it in the safety documents to be developed*

Biota protection - ICRP

- So far ICRP had believed “*that the standard of environmental control needed to protect man to the degree desirable will ensure that other species are not put at risk ...*” .
- **New activities:**
 - ICRP Publication 91 published;
 - Special ICRP Committee 5 established since 2005;
 - Committee 5 develops recommendations on selection and characterization of reference plants and animals.

Biota protection - IAEA

- Part of the regular programme:
 - Since 2001, three major meetings;
 - TECDOCs 1091 and 1270 published;
 - Stockholm Conference, 2003, “ ... *strongly supported the development of a framework for environmental radiation protection.*”
 - Plan of Activities on the Radiation Protection of the Environment recently approved by the BoG.
 - Coordinating actions start early next year.

IAEA safety documents in the area of discharge control

Fundamentals

**The Principles
of Radioactive
Waste
Management**

Requirements

**International Basic
Safety Standards
for Protection
Against Ionizing
Radiation**

Guides

**Regulatory
Control of
Radioactive
Discharges to the
Environment**

Reports

**Generic Models
for Use in
Assessing the
Impact of
Radioactive
Discharges, SR-19**

**Environmental
and Source
Monitoring for
Radiation
Protection
Purposes**

**Monitoring and
Surveillance of
Residues from the
Mining and
Milling, SR-27**

**Surveillance and
Monitoring of
Near Surface
Disposal Facilities
for Radioactive
Waste, SR-35**



SAFETY GUIDE



IAEA Safety Standards
for protecting people and the environment

Environmental and
Source Monitoring for
Purposes of Radiation
Protection

Safety Guide

No. RS-G-1.8



International Atomic Energy Agency

RS-G-1.8: Environmental and Source Monitoring for Purposes of Radiation Protection

- **Objective:** *to provide international guidance, coherent with contemporary radiation protection principles and IAEA safety requirements, on the strategy of monitoring.*
- **Situations:**
 - **a) practice: control of radioactive discharges;**
 - **b) intervention:**
 - **nuclear or radiological emergencies;**
 - **past contamination of areas with long-lived radionuclides (existing exposure).**

Scope of RS-G-1.8

- **Strategy for sampling and measurements:**
 - **Source monitoring;**
 - **Environmental monitoring**
 - **Individual monitoring**
- **General guidance on dose assessment**
- **Interpretation of monitoring results**
- **Out of scope:**
 - **monitoring of workers and the workplace**
 - **monitoring for research purposes**
 - **monitoring of toxic chemicals in the environment**

Safety Reports Series supporting application of the IAEA's safety standards

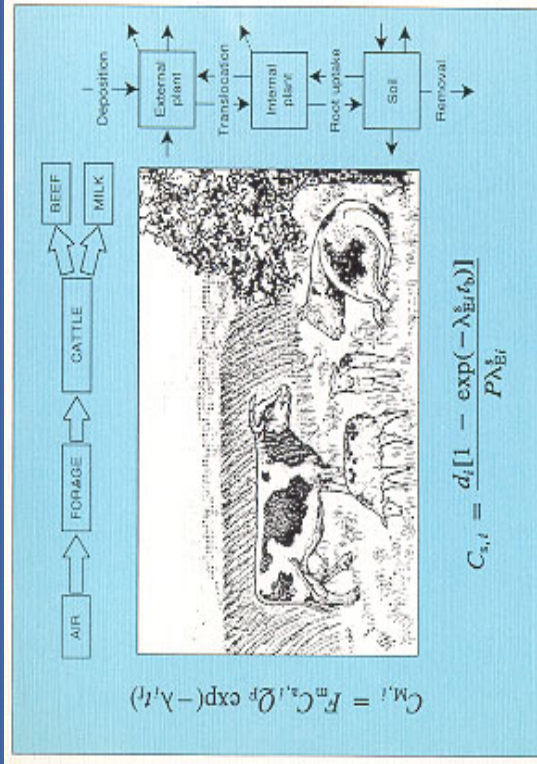
Safety Reports Series No. 19

**Generic Models for
Use in Assessing the
Impact of Discharges of
Radioactive Substances
to the Environment**

Safety Reports Series No. 35

**Surveillance and
Monitoring of Near
Surface Disposal
Facilities for
Radioactive Waste**

Technical Reports Series supporting application of the IAEA's safety standards



TECHNICAL REPORTS SERIES NO. **364**

Handbook of Parameter Values for the Prediction of Radionuclide Transfer in Temperate Environments

IAEA Produced in collaboration with the International Union of Radioecologists



INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, 1994



Conclusions

- The EMRAS project is in the middle of its activities.
- There are substantial new developments in the area of radiation protection of the public and the environment from ionizing radiation.
- The EMRAS project aims at adequate technological support of the new developments in the area of environmental radioactivity.