

# EMRAS

## Working Group on model validation for radionuclide transport in the aquatic systems: Watershed-Rivers-Estuaries

### Minutes of the 1<sup>st</sup> Working Group Meeting

IAEA Headquarters, Vienna, 1<sup>st</sup>-5<sup>th</sup> September 2003

#### Working Group attendance

Along the duration of the EMRAS inception meeting, 16 EMRAS participants joined the Rivers WG. Luigi MONTE (Italy) acted as WG leader and Didier LOUVAT (IAEA) as scientific secretary.

Among the participants a core group of 11 people representing 11 different research institutes, had their main interest in this EMRAS WG.

#### Models presentation

8 different models were presented with respect to the type of assessment they are used for. The table 1 summarizes models' characteristics and capabilities.

Table 1

Model	Water System		Target quantities			Contamination scenario		Countermeasure modeling	Radionuclides
	River	Estuary	Water	Sediment	Biota	Direct Input	Deposition		
Univ. Seville		X	X	X		X			A; FP, NORM
IRSN	X		X	X	X	X			FP
EDF	X	X	X	X	X	X			A; FP; AP
SCK-CEN	X		X	X	X	X			FP; AP
RODOS	X	X	X	X	X	X	X	X	A; FP; AP
MOIRA	X		X	X	X	X	X	X	FP
JAERI	X		X	X	X	X	X		FP
IES		X	X	X	X	X			FP

*A: actinides; FP: fission products; AP: activation products*

#### Definition of modeling priorities

The WG has defined several priorities to select the scenarios for the intercomparison exercise. They are presented below by order of importance:

1. Important radionuclides other than Cs and Sr
2. Extreme events
3. Physical factors dealing with remobilisation
4. Biological factors dealing with migration
5. Modelling countermeasures

In addition, the WG has agreed to significantly contribute to the EMRAS WG devoted to the revision of the IAEA-TRS report 364 on environmental radioactivity modelling. To this aim, the WG nominated John BRITAIN to collect, assemble and discuss the WG contributions

with the WG on TRS 364. In reciprocity, the TRS WG has appointed Valery KONOPLEV to follow the work of the WG Rivers

The WG justified the delineation of the priorities as no or very few exercises relevant to each specific topic were done in the past. As for flood events no validated models are available (the aim is to develop a new validated model to be implemented in CDSSs). All these topics are of importance from a radiological point of view and all these exercises are actually feasible

## Scenarios

3 scenarios have been selected to implement intercomparison exercises on selected priorities:

-A scenario to model the wash-off of  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  deposit from the Pripjat floodplain. 3 flood events are going to be considered in this scenario, the events from 1991, 1994 and 1999. The 1999 event scenario offers the possibility to assess the efficiency of countermeasures taken at that time.

-A scenario to model the release of Pu into the Tеча River

-A scenario to model the discharge from Dnieper into its estuary:

In addition to these 3 scenarios, the WG has decided to run a case study of  $^3\text{H}$  migration through rivers, including several discharge points with transient releases and an estuary subject to strong tidal effects. This work is however pending to the agreement of the data supplier.

## Exercises definition and time table

### Wash-off of $^{90}\text{Sr}$ and $^{137}\text{Cs}$ from Pripjat floodplain

Relevant issues: Extreme events; Physical factors dealing with remobilisation; modelling countermeasures

Time table: from 09/03 to 05/04

Participants: MOIRA, RODOS, IRSN, JAERI, U.Sevilla

### Release of Pu into Tеча River

Relevant issues: Important radionuclide other than Cs and Sr ; Physical factors dealing with remobilisation ; Biological factors dealing with migration

Time table: from 12/03 to 11/04

Participants: MOIRA, RODOS, IRSN, JAERI, SCK-CEN, EDF

Discharge into the Dnieper estuary  
Relevant issues: Physical factors dealing with remobilisation; Biological factors dealing with migration

Time table: from 2003 to 2005

Participants: RODOS, U.Sevilla, Typhoon, IES, EDF

### Case study on $^3\text{H}$ migration through rivers

Relevant issue: Important radionuclide other than Cs and Sr

Time table: pending to the agreement of the data supplier

Participants: the WG

### Revision of TRS364:

Preparation of a draft of the aquatic chapter

Time Table: first discussion in 05/2004

Participants: the WG