

**The IAEA's Programme on
Environmental Modelling for Radiation Safety
(EMRAS II)**

**EMRAS II
Approaches for Assessing Emergency Situations
Working Group 7
"Tritium" Accidents
MINUTES**

**of the Sixth WG7 Meeting hosted by IFIN-HH Bucharest-Magurele
Parliament Hotel, Bucharest, ROMANIA
12–15 September 2011**

IAEA Scientific Secretary	Working Group Leader
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Attending	
Name / Initials* / Email	Organization / Country
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Mr Philippe Guetat (<i>PG</i>) (philippe.guetat@cea.fr)	Commissariat à l'Energie Atomique (CEA) – Valduc, FRANCE
Mr Markus Iseli (<i>MI</i>) (markus.iseli@iter.org)	ITER Organization, FRANCE
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*Initials used to refer to participants within minutes and actions as appropriate.

Background

The EMRAS II Working Group 7 (WG7) includes certain areas of interest in connection with accidental releases of tritium in the environment, i.e. to:

- develop a standard conceptual dynamic model for tritium dose assessment for acute releases to the atmosphere and water bodies;
- drive the new model with given air or water concentrations (HT or HTO) and the duration of the exposure. These concentrations will be obtained by each major user from the best available atmospheric and aquatic transport models for the site in question. The question of tritium washout, which is not specifically addressed in atmospheric dispersion models, needs to be further investigated;
- agree on common submodels for specific transfers or processes, based on an interdisciplinary approach involving the understanding of the processes and key parameters, based on recent findings in all Life Sciences;
- define the framework for an operational model (requirements for meteorological data, atmospheric transport, site specific data);
- obtain or develop quality assured submodels that will result in predictions with a moderate degree of conservatism; and
- have the capability to assimilate real measured data into the models.

Working Group attendance

This meeting was the sixth meeting of WG7, was hosted by IFIN-HH in Bucharest-Magurele and was held at the Parliament Hotel. Twelve participants from 7 countries attended the meeting and the sessions were moderated by *DG*, and *VB* served as the IAEA's Scientific Secretary.

Scope and Objectives of the Meeting

The main objectives of the meeting were to:

- agree on the structure of final WG7 report (TECDOC);
- discuss the final draft document for tritium interaction matrices, tritium washout, tritium transfer from air to crops, tritium transfer in farm animals, tritium transfer in aquatic foodchain, tritiated water (HTO) conversion to organically bound tritium (OBT);
- discuss the draft documents of key parameters for tritium modelling and soil to plant transfer;
- present the German experimental work on tritium transfer in winter wheat and discuss the model results;
- discuss the quality assurance on OBT measurements and environmental models;
- discuss analysis of dry deposition and reemission of HT and give a briefing of a complex model;
- present status and perspectives for tritium research;
- give short presentation on status of tritium experiments in Semipalatinsk area.

Work performed

The meeting began with a short overview of the conclusions and the work plan agreed during the previous (fifth) WG7 meeting held as part of the Third (final) EMRAS II Technical Meeting, IAEA headquarters in Vienna, 24–28 January 2011. The general ideas of model uncertainties were discussed and the final draft documents for tritium washout, tritium interaction matrix, tritium transfer from air to crops, tritium transfer in farm animals, tritium transfer in aquatic foodchain, tritiated water (HTO) conversion to organically bound tritium (OBT) were presented and slight improvements were agreed concerning the final documents.

Concerning tritium transfer from soil to crops, it was agreed that certain improvements are needed and will be carried out in due course.

Future Work Programme

Participants were asked to submit their final documents by latest mid-November 2011 in order to be allow preparation of the final draft of the TECDOC by the end of December 2011. IFIN-HH will collect all of the submitted documents, and will put them together using the IAEA's template. The TECDOC will then be submitted to the IAEA for checking and formatting into its final form prior its publication.

Next Meeting

It was the last meeting of the EMRAS II WG7 and it is planned that further activities will continue within the frame of the follow-up programme to EMRAS II – “MODARIA” **MO**delling and **DA**ta for **R**adiological **I**mpact **A**ssessments) – which will run for 4 years (2012–2015) and the first Technical Meeting will take place at IAEA headquarters in Vienna, 19–22 November 2012.

WG7 MEETING AGENDA

Monday, 12 September 2011

09:00–09:30	Opening	Volodymyr Berkovskyy (IAEA Scientific Secretary) & Meeting Hosts/Organizers
09:30–10:00	Introduction on tritium accident – the final draft	Markus Iseli (ITER) / Dan Galeriu, WGL (IFIN-HH, Romania)
10:00–10:30	Quality assurance of environmental tritium models	Juraj Duran (VÚJE Inc., Slovak Republic) All WG participants
10:30–11:00	<i>COFFEE BREAK</i>	
11:00–11:30	*Quality Assurance for OBt measurements in environmental samples – the final draft	Sang Bog Kim (AECL, Canada)
11:30–12:30	Tritium *interaction matrix – the final draft	Severine Le Dizes-Maurel (IRSN, France)
12:30–14:00	<i>LUNCH BREAK</i>	
14:00–16:00	Application: wheat scenario, OBt production and partition in day and night	Dan Galeriu
	Presentation of *experimental work (unpublished results)	Siegfried Strack (KIT, Germany)
	Preliminary results (IFIN, JAEA, CEA, CRL) – *Wheat scenario, *Statistical Performances Measures – models comparison	Dan Galeriu, Luc Patryl (CEA, France)
	Brain storming: OBt formation in night	All WG participants
16:00–16:20	<i>COFFEE BREAK</i>	
16:20–17:30	*Tritium washout – the final document	Luc Patryl, Dan Galeriu, Anca Melintescu (IFIN-HH, Romania)

Tuesday, 13 September 2011

09:00–10:00	*Aquatic pathways – the final draft	Anca Melintescu, Dan Galeriu / Francoise Siclet (EDF, France)
10:00–10:30	*HT and HTO dry deposition and reemission – the final draft	Haruyasu Nagai (JAEA, Japan)
10:30–10:55	<i>COFFEE BREAK</i>	
10:55–12:30	*HTO uptake in plants and OBt formation during the day time	Anca Melintescu
12:30–14:00	<i>LUNCH BREAK</i>	
14:00–15:30	*Overview experiments on tritium transfer from air to plants and the subsequent conversion to OBt with focus on night cases – the final draft	Dan Galeriu
	Suggestions for modelling OBt formation in night	Dan Galeriu All WG participants
15:30–16:00	<i>COFFEE BREAK</i>	
16:00–17:00	*Review on soil-plant tritium transfer Spatial variability of tritium re-emission, review of soil-plant models and *development prospects – draft	Vlad Korolevych (AECL, Canada)
17:00–18:00	*TOCCATA status, planned tritium experiments, upgrade plans	Severine Le Dizes-Maurel (IRSN, France)

Wednesday, 14 September 2011

09:00–10:00	Tritium transfer in *farm animals – the final draft	Dan Galeriu & Anca Melintescu
10:00–10:30	*Key processes and parameters - draft	Philippe Guetat (CEA, France)
10:30–11:00	<i>COFFEE BREAK</i>	
11:00–12:00	Briefing of complex model – the final draft; discussions	Haruyasu Nagai
12:00–13:30	<i>LUNCH BREAK</i>	
13:30–14:00	Working document on appropriate crops models (simple and process level); classes of crops	Dan Galeriu
14:00–15:20	Further programme after EMRAS II	Volodymyr Berkovskyy / Dan Galeriu
	ETMOD status, past tests, week points, upgrade plans	Vlad Korolevych
	*Planned OBt experiments at CRL	Sang Bog Kim (AECL, Canada)
	CEA Tritium code upgrade EMRAS after Fukushima	Luc Patryl, Philippe Guetat (CEA, France) Volodymyr Berkovskyy
15:20–15:40	<i>COFFEE BREAK</i>	
15:40–16:20	TECDOC template	Dan Galeriu
16:20–16:40	Tritium in Semipalatinsk, *Kazakhstan	Zhanat Baigazazinov (IRSE, Kazakhstan)
16:20–17:20	Terrestrial conceptual model - discussion	Dan Galeriu All WG participants

Thursday, 9 September 2010

<i>Morning</i>	<i>VISIT TO IFIN-HH</i>	
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* Indicates the name of the presentation given on the WG7 web page (<http://www-ns.iaea.org/projects/emras/emras2/working-groups/working-group-seven.asp?s=8>).