Publications from the EMRAS I Programme

Gerhard Pröhl

2nd EMRAS II Technical Meeting
IAEA Headquarters, Vienna
25–29 January 2010
Topics in EMRAS I

- Revision of the IAEA Handbook on transfer in terrestrial and aquatic environments (TRS-364)
- Environmental transfer of $^3$H and $^{14}$C
- Environmental transfer of $^{131}$I (use of Chernobyl data)
- Radionuclide transfer in aquatic systems
- Behaviour of radionuclides in urban environments
- Estimating the exposure of non-human biota
- Behaviour of NORM in the environment
IAEA Publications

• Technical Report Series
  • Handbook of Parameter Values for the Prediction of Radionuclide Transfer in Terrestrial and Freshwater Environments, IAEA-TRS-472 (published 2010)

• Published TECDOCS
  • Quantification of Radionuclide Transfer in Terrestrial and Freshwater Environments for Radiological Assessments, IAEA-TECDOC-1616, 618 p.

• 6 TECDOCS to be published
  • Modelling the Environmental Transfer of Tritium and $^{14}$C to Biota and Man
  • Testing of Models for Predicting the Behaviour of Radionuclides in Freshwater Systems and Coastal Areas
  • Modelling Radiation Exposure and Radionuclide Transfer to Non-Human Species
  • Modelling the Transfer of Radionuclides from Naturally Occurring Radioactive Material (NORM)
  • Environmental Modelling of Remediation of Urban Contaminated Areas
  • Validation of $^{131}$I ecological transfer models and thyroid dose assessments using Chernobyl fallout data
Urban Modelling

Thiessen, K.M., Batandjieva, B., Andersson, K.G., Arkhipov, A., Charnock, T.W.,
Gallay, F., Gaschak, S., Golikov, V., Hwang, W.T., Kaiser, J.C., Kamboj, S., Steiner, M.,
Tomás, J., Trifunovic, D., Yu, C., Zelmer, R., and Zlobenko, B.

**Improvement of modelling capabilities for assessing urban contamination: The EMRAS Urban Remediation Working Group.**

Thiessen, K.M., Arkhipov, A., Batandjieva, B., Charnock, T.W., Gaschak, S., Golikov,
V., Hwang, W.T., Tomás, J., and Zlobenko, B.

**Modelling of a large-scale urban contamination situation and remediation alternatives.**

J.C., Kamboj, S., Steiner, M., Tomás, J., Trifunovic, D., and Yu, C.

**Modelling the long-term consequences of a hypothetical dispersal of radioactivity in an urban area including remediation alternatives.**

Thiessen, K.M., Andersson, K.G., Charnock, T.W., and Gallay, F.

**Modelling remediation options for urban contamination situations.**
Environmental Transfer of $^{131}I$

M. Bartusková, I. Malátová, V. Berkovskyy, P. Krajewski, M. Ammann, V. Filistovic, T. Homma, J. Horyna, B. Kanyár, T. Nedveckaite, O. Vlasov and I. Zvonova

_**Radioecological assessments of the iodine working group of IAEA’s EMRAS programme: Presentation of input data and analysis of results of the Prague scenario**_


_**Validation of $^{131}I$ ecological transfer models and thyroid dose assessments using Chernobyl fallout data from the Plavsk district, Russia**_

*J. Environment Radioactivity, January 2010*
Revision of TRS

• Special Issue of Journal Environmental Radioactivity
  • Volume 100, Issue 9, September 2009
  • 20 papers to specific environmental transfer process
• Largest EMRAS I working group
• Includes input from other working groups
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<td>Ph. Calmon, S. Fesenko, G. Voigt, G. Linsley</td>
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<td>Interception of dry and wet deposited radionuclides by vegetation</td>
<td>Gerhard Pröhl</td>
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<td>Foliar transfer into the biosphere: review of translocation factors to cereal grains</td>
<td>C. Colle, C. Madoz-Escande, E. Leclerc</td>
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<td>Vertical migration of radionuclides in undisturbed grassland soils</td>
<td>Gerald Kirchner, Friederike Strebl, Peter Bossew, Sabine Ehiken, Martin H. Gerzabek</td>
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<td>Influence of crop types and soil properties on radionuclide soil-to-plant transfer factors in tropical and subtropical environments</td>
<td>H. Velasco, J. Juri Ayub, U. Sansone</td>
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<td>Root uptake of radionuclides following their acute soil depositions during the growth of selected food crops</td>
<td>Yong-Ho Choi, Kwang-Muk Lim, In Jun, Doo-Won Park, Dong-Kwon Keum, Chang-Lee</td>
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<td>Radionuclide transfer to fruit in the IAEA TRS 364 Revision</td>
<td>Franca Carini</td>
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<td>Transfer parameter values in temperate forest ecosystems: a review</td>
<td>Philippe Calmon, Yves Thiry, Gregor Zibold, Aino Rantavaara, Sergei Fesenko</td>
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<td>Quantifying the transfer of radionuclides to food products from domestic farm animals</td>
<td>B.J. Howard, N.A. Beresford, C.L. Barnett, S. Fesenko</td>
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<td>Watershed wash-off of atmospherically deposited radionuclides: a review of normalized entrainment coefficients</td>
<td>L. Garcia-Sanchez, A.V. Konoplev</td>
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<td>The role of physical processes controlling the behaviour of radionuclide contaminants in the aquatic environment: a review of state-of-the-art modelling approaches</td>
<td>Luigi Monte, Raul Periañez, Patrick Boyer, Jim T. Smith, John E. Britain</td>
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<td>Probabilistic distribution coefficients ($K_{ds}$) in freshwater for radioisotopes of Ag, Am, Ba, Be, Ce, Co, Cs, I, Mn, Pu, Ra, Ru, Sb and Th – implications for uncertainty analysis of models simulating the transport of radionuclides in rivers</td>
<td>P. Ciffroy, G. Durrieu, J.-M. Garnier</td>
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<td>Mass balance approach to estimating radionuclide loads and concentrations in edible fish tissues using stable analogues</td>
<td>T.L. Yankovich</td>
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<td>The role of analogues in radioecology</td>
<td>Beata Varga, Elisabeth Leclerc, Peter Zagyvai</td>
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Protection of the Environment

• 7 papers dealing with
  • Dosimetry
  • Transfer of radionuclides to biota in terrestrial and aquatic ecosystems
  • Model comparison
  • Model performance
Protection of the Environment


Conclusions

• Numerous publications contribute to the success of EMRAS

• Intensive publication in peer reviewed journals underlines the high quality of the work of EMRAS

• Success provided by the consequent integration of the publication in the plans of the working groups