

Toward an integrated, joint cross-border detection system and harmonized rapid responses procedures to chemical, biological, radiological and nuclear emergencies MIS-ETC Code: 774

Newsletter EMERSYS 7

www.emersys.eu

Preparedness, planning and intervention in case of chemical, biological and radiological/nuclear emergencies

A special issue of the Romanian Journal of Physics (RJP, Volume 59, Number 9-10, 2014, see also www.nipne.ro/rjp) for dissemination the scientific results in the framework of the EMERSYS project "Toward an integrated, joint cross-border detection system and harmonized rapid responses procedures to chemical, biological, radiological and nuclear emergencies", MIS-ETC code: 774, was printed in 300 pcs.

Within the Romania-Bulgaria Cross-Border Cooperation Program 2007-2013, Priority Axis: 2 - Environment - Sustainable use and protection of natural resources and environment and promotion of efficient risk management in the cross-border area, Key area of intervention: 2.2 - Development of the joint infrastructure and services to prevent the impact of natural and man-made crises, including joint emergency response services, during the period July 2013 - July 2015, the activities foreseen within "EMERSYS Toward an integrated, joint cross-border detection system and harmonized rapid responses procedures to chemical, biological, radiological and nuclear emergencies" project, MIS-ETC code: 774 are implemented.

Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering - IFIN-HH is the project leader and has as partners from Romania, the General Inspectorate for Emergencies Situations - Ministry of Internal Affairs (GIES), and in Bulgaria, the Institute for Nuclear Research and Nuclear Energy of the Bulgarian Academy of Sciences (INRNE) and Directorate General for Fire Safety and Civil Protection, Ministry of Interior (DGFSCP).

EMERSYS project is financed by European Funds for Regional Development in proportion of 85% and co-financed by Governments of Romania and Bulgaria, the total value being of 6,428,807.22 euro.

General objective of the EMERSYS project: Provide authorities from the entire Romanian-Bulgarian (RO-BG) cross-border area with means for the coordinated implementation of European Community strategies and legislation, as well as of bilateral-Conventions, regarding emergency preparedness, planning and intervention in case of chemical, biological and radiological/nuclear (CBRN) emergencies.



Investing in your future!

Romania-Bulgaria Cross Border Cooperation Programme 2007-2013 is co-financed by the European Union through the European Regional Development Fund

www.cbcrromaniabulgaria.eu

The EMERSYS project is dedicated to streamline coordination between emergency authorities from the RO-BG cross-border area in practical implementation of legal and political undertakings (SEVESO II, ECURIE, UNECE Convention on trans boundary effects of industrial accidents), by providing effective means for a more harmonized emergency management on the local and regional (NUTII) levels, based on a common approach, from a European perspective.

The project focuses on creation of a unitary emergency infrastructure for early detection and intervention related to chemical and nuclear facilities, as well as biological and radiological situations of major risk from the Romanian-Bulgarian cross-border area. In the event of an emergency with off-site effect, this will enable for the rapid detection and notification of releases, the monitoring of the progression of an accident from the moment of detection, to forecasting and estimating the ongoing and the potential releases, as a function of time.

The EMERSYS project will put in place a system that joins forces, shares resources and eliminates duplication of national efforts related to CBRN events, providing thus for an economically efficient and sustainable, rapid cross-border response force, capable to react as a single unit, for the mutual benefit.

Specific objectives to be implemented:

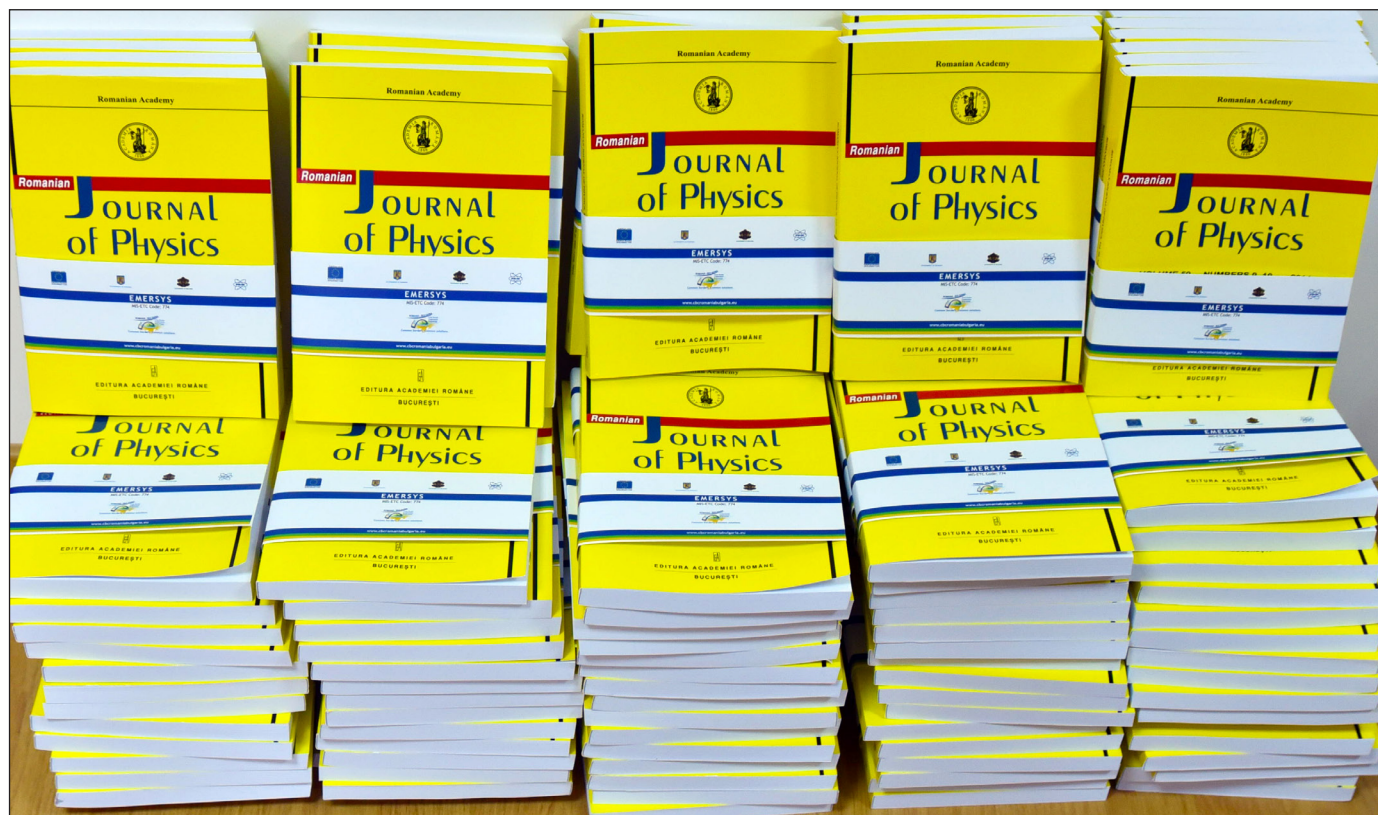
- Enhance the technical capability for detection and notification of CBRN events with potential trans-boundary effect and implementation of a joint decision support

tool (DST) at the level of all Emergency Inspectorates/ Civil Protection Directorates from the entire Romanian-Bulgarian cross-border area.

- Integrate the newly created infrastructure and the existing national early-warning system and interconnect the Emergency Inspectorates/ Directorates of Civil Protection from the cross-border area by setting-up a platform for bilateral and on-line exchange of information related to hazardous materials including radioactive substances also.
- Harmonize local plans and procedures for off-site intervention in case of major chemical accidents, biological and radiological/nuclear emergencies and development of collaboration plans and protocols.
- Enhance the emergency expertise from the cross-border area by training the operational staff.
- Raise public awareness in the cross-border area related to technological risk for the population in the Romanian-Bulgarian border area.

Implementation of an adequate and well-structured system that provides reliable detection and real-time notification is of outmost significance for an effective and timely response in emergencies resulting from industrial accidents, and is a pre-requisite to further implementation of a realistic civil protection policy.

A Decision Support Tool having access to, and using in an integrated manner, data from the entire cross-border area (regardless of physical country border) serves as a power-



Investing in your future!

Romania-Bulgaria Cross Border Cooperation Programme 2007-2013 is co-financed by the European Union through the European Regional Development Fund

ful tool to responsible authorities for implementing countermeasures within a time compatible with that needed to protect the population. This also offers a better coherence and transparency in the decision processes on local and border-crossing interventions as one input to improving public understanding and acceptance of off-site measures.

The RO-BG cross-border area concentrates the two countries' energy production capabilities based on nuclear technology (Cernavoda and Kozloduy NPPs), as well as important activities and industrial facilities having a high potential of risk due to routine handling of dangerous substances.

The recent process of technological risk identification at the border between Romania and Bulgaria (required by the SEVESO II, Directive 96/82/EC) shows that the main hazards in the cross-border area, comes from fertilizer industry, chemical industry, transport of dangerous substances, storing of petrochemicals, power supply and water treatment.

The necessity of implementation of core infrastructure for TIC detection in the cross-border area, resides in the requirements of fulfilling the obligation imposed by the 96/82/EC Directive (SEVESO II) and by the UNECE Convention on trans boundary effects of industrial accidents (signed by both Romania and Bulgaria).

The largest part of the funds allocated has been used for the purchase of equipment and specialized software destined to GIES from Romania and DGFSCP from Bulgaria in order to improve the technical capabilities for detection, assessment and forecasting in Chemical, Biological, Radiological and Nuclear (CBRN) emergency situations. Intervention teams for CBRN emergency situations in the counties from the Romanian-Bulgarian border shall use the same type of equipment, a joint platform for data exchange and communication shall be implemented, national plans for intervention in CBRN emergency situations shall be harmonized, as well as the coordination of their implementation. Local and national communities shall get informed periodically on the new technical, logistic and organizational capabilities in the field of intervention in case of CBRN emergency situations. The two national institutes in nuclear field from Romania and Bulgaria ensure the theoretical and practical training of GIES and DGFSCP members, prepare methodological guides and work instructions for the use of the purchased equipment. The publishing of scientific articles in the field of intervention in case of CBRN emergency situations and in related fields is another goal of EMERSYS project (for details see www.emersys.eu), as a dissemination of results from the project.

In this issue of Romanian Journal of Physics, you can find 23 scientific articles in the field of intervention in case of CBRN emergency situations, as well as from related fields, with contribution of researchers from 18 R&D institutes and universities from Romania and Bulgaria.

List of scientific papers published in this volume (for more information please see also electronic version of the Romanian Journal of Physics, www.nipne.ro/rjp):

Radiation Monitoring under Emergency Conditions

M. Dragusin, D. Stanga, D. Gurau, E. Ionescu
Horia Hulubei National Institute of Physics and Nuclear Engineering

Review of the Principal Mechanism of Radon in the Environment

Daniela Gurau, Doru Stanga, Mitica Dragusin
Horia Hulubei National Institute of Physics and Nuclear Engineering

Radioactive Decontamination Technique Used in Decommissioning of Nuclear Facilities

Daniela Gurau, Radu Deju
Horia Hulubei National Institute of Physics and Nuclear Engineering

Introduction in Means and Methods Used in Chemical, Biological, Radiological, and Nuclear Decontamination

C. Dragolici, F. Dragolici
Horia Hulubei National Institute of Physics and Nuclear Engineering

Applications of Ams in Bucharest for Detecting Nuclear Pollution

C. Stan-Sion, M. Enachescu
Horia Hulubei National Institute of Physics and Nuclear Engineering

JRODOS Expert System and the Customisation to Romanian Conditions

Slavnicu Stelian Dan, Gheorghiu Dorina, Gheorghiu Adriana
Horia Hulubei National Institute of Physics and Nuclear Engineering

Terms of Reference for Assessing Nuclear and Chemical Emergencies in View of Preparedness and Response.

An Outlook

B.I. Vamanu^{1,2}, V. Acasandrei¹
¹Horia Hulubei National Institute of Physics and Nuclear Engineering, ²European Commission Joint Research Center (EC-JRC), Institute for Energy and Transport (IET), Ispra (VA), Italia

Radiological Characterization Activities During the Partial Dismantling of the IRT - Sofia Research Reactor Facilities

Tz. Nonova, D. Stankov, Al. Mladenov, K. Krezhov
Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria

Modern Training Tools in Nuclear Field

Gabriel Stanescu
Horia Hulubei National Institute of Physics and Nuclear Engineering

Nuclear Meteorology at IFIN-HH

D. Galeriu, A. Melintescu, M. Duma, B. Zorila, A. Gheorghiu
Horia Hulubei National Institute of Physics and Nuclear Engineering

The Efficiency Dependence on the Analyzed Sample Characteristics in Gamma-Ray Spectrometric Analysis

Laurentiu Done, Liviu Cornel Tugulan, Felicia Dragolici, Carmela Alexandru, Maria Sahagia
Horia Hulubei National Institute of Physics and Nuclear Engineering

Investing in your future!

Romania-Bulgaria Cross Border Cooperation Programme 2007-2013 is co-financed by the European Union through the European Regional Development Fund

www.cbcrromaniabulgaria.eu



Thorough Investigation of Radon Concentration Variations in Baita Bihor (Romanian National Radioactive Waste Repository - DNDR)

A. Petrescu¹, L. Done¹, F. Dragolici¹, I. Prisecaru², G. Pavel², H. Popa³

¹Horia Hulubei National Institute for Nuclear Physics and Engineering, ²University Politehnica of Bucharest, ³Technical University of Civil Engineering, Bucharest

The Vertical Distribution of Rock Salt Thermoluminescence in the Slanic-Prahova (Romania) Halite Deposits

Claudia Mariana Gomoiu¹, R.M. Margineanu¹, Ana-Maria Blebea-Apostu¹, B. Mitrica¹, A. Jipa², O.G. Duliu²

¹Horia Hulubei National Institute of Research and Development for Physics and Nuclear Engineering, ²University of Bucharest, Department of Structure of Matter, Earth and Atmospheric Physics and Astrophysics

Analysis of Radioactive Effluents Pipelines for Contamination/Activation

Ioan Iorga, Daniela Gurau, Octavian Sima

Horia Hulubei National Institute of Physics and Nuclear Engineering

³²P - Radioactive Tracer for the Evaluation of Fertilizers Influence on Nutrients Translocation Process from Soil to the Plants

C. Cimpeanu, C. Barna, M. Iliescu

Horia Hulubei National Institute of Physics and Nuclear Engineering

Determination of Heavy Metal Levels in Water and Therapeutic Mud by Atomic Absorption Spectrometry

C. Radulescu¹, I.D. Dulama², C. Stih¹, I. Ionita¹, A. Chilian³, C. Necula⁴, Elena Daniela Chelarescu⁵

¹Valahia University of Targoviste, ²Valahia University of Targoviste, Multidisciplinary Research Institute for Sciences and Technologies, ³Valahia University of Targoviste, Doctoral School, ⁴Valahia University of Targoviste, Faculty of Environmental Engineering and Food Science, ⁵Horia Hulubei National Institute for Physics and Nuclear Engineering

Retrospective Dosimetry of Radon Gas Based on the Activity of ²¹⁰Po in Glass Objects

T. Dicu^{1,2}, S.E. Armentcea (Mutoiu)¹, B. Burghel^{1,2}, C. Cosma^{1,2}

¹Faculty of Environmental Science and Engineering, Babeş-Bolyai University, Cluj-Napoca, Romania, ²Interdisciplinary Research

Institute on Bio-Nano-Sciences, Babeş-Bolyai University, Cluj-Napoca

Mass Spectrometry at Atmospheric Pressure: the Analysis of the Volatile Organic Compounds and SO₂

D. Skliros¹, A. M. Iordache^{1,2}, C. Ceaus^{1,2}, A. Cucu^{1,2}, L. Popovici^{1,2}, S. Voinea^{1,2}

¹University of Bucharest, Faculty of Physics, ²University of Bucharest, Faculty of Physics, ³Nano-SAE Research Center Determination of Saharan Dust Properties over Bucharest, Romania. Part 1: Procedures and Algorithms

L. Labzovskii^{1,2}, F. Toanca^{1,2}, S. Stefan¹

¹University of Bucharest, Faculty of Physics, ²National Institute of Research and Development for Optoelectronics, Magurele - Bucharest

Determination of Saharan Dust Properties over Bucharest, Romania. Part 2: Study Cases Analysis

L. Labzovskii¹, F. Toanca^{1,2}, D. Nicolae¹

¹University of Bucharest, Faculty of Physics, ²National Institute of Research and Development for Optoelectronics, Magurele - Bucharest

Large-Scale Mechanisms Responsible for Heat Waves Occurrence in Romania

N. Barbu^{1,2}, F. Georgescu², V. Ştefănescu², S. Ştefan¹

¹University of Bucharest, Faculty of Physics, ²National Meteorological Administration, Bucharest

Modeling the Precipitation Amounts Dynamics for Different Time Scales in Romania Using Multiple Regression Approach

N. Barbu^{1,2}, V. Cuculeanu^{1,3}, S. Stefan¹

¹University of Bucharest, Faculty of Physics, ²National Meteorological Administration, Bucharest, Romania, ³Academy of Romanian Scientists, Bucharest

The Behavior of Underground Power Cables under the Action of Stress Factors

I. Ionita¹, C. Radulescu¹, C. Stih¹, I.V. Popescu^{1,2,3}, A. A. Poinescu⁴, I.R. Bunghez⁵

¹Valahia University of Targoviste, Faculty of Science and Arts,

²Horia Hulubei National Institute for Physics and Nuclear Engineering, Romania, ³Academy of Romanian Scientists, Bucharest, ⁴Valahia University of Targoviste, Faculty of Materials Engineering and Mechanics, ⁵ICECHIM Nanomedicine Research Group, Bucharest

Project title:

“Toward an integrated, joint cross-border detection system and harmonized rapid responses procedures to chemical, biological, radiological and nuclear emergencies”

MIS-ETC Code: 774

Editor of the material: Horia Hulubei National Institute of Physics and Nuclear Engineering (IFIN-HH)

Publication date of the document: January 12, 2015

The content of this material does not necessarily represent the official position of the European Union.

Investing in your future!

Romania-Bulgaria Cross Border Cooperation Programme 2007-2013 is co-financed by the European Union through the European Regional Development Fund

www.cbcrromaniabulgaria.eu