



*8th International Workshop on
Biological Effects of Electromagnetic Fields
21-26 September 2014, Varna, Bulgaria*

Programme

Attention! Posters on relevant topics should be available at the same time of the oral presentations (the same Session). The numbers of the posters are in brackets.

Note:  Papers with this sign will be presented by students

21 September, Sunday

Hotel "Meliá Grand Hermitage"

15.00 – 18.30 - Registration

18.30 - Welcome reception

22 September, Monday

Hall 1

Presidium: Prof. M. Markov, Prof. T. Kalkan, A. Locasto, Prof. C. Sammut, Prof. M. Israel

9.30 – 10.30 Welcome officials

10.30 – Coffee break

11.00 – 12.30 **Plenary Session**

Hall 1

Chairmen: Prof. M. Israel, Prof. C. Sammut

1. Emilie van Deventer - *WHO policy on risk assessment concerning ionizing and non-ionizing radiation*
2. Michel Israel – *An historical overview of the activities in the field of exposure and risk assessment of non-ionizing radiation in Bulgaria*
3. Marko Markov – *Hazard and benefit of electromagnetic fields*

12.30 – 13.30 – Lunch

Hall 1

13.30 – 15.30 **Session 1. "Quality of science":** *The SCENIHR opinion on potential health effects of exposure to electromagnetic fields* - Prof. Theodoros Samaras

Chairmen: Prof. T. Samaras, Prof. Ch. Ohkubo

Round table: *Risk communication programs; Risk assessment and management; Regulatory policy; Policy practice in different countries*

1. *Risk communication on ELF MF and childhood leukemia*, Norbert Leitgeb
2. *Risk communication activities of health risks on EMF in Japan*, Chiyoji Ohkubo
3. *Public perception on RF radiation and the radiation measurement from mobile telephone base station (MTBS) in Malaysia*, Wan Saffiey Wan Abdullah, Rozaimah Abd Rahim, Roha Tukimin, Noor Ezati Shuib
4. *Dynamics of the public concern and risk communication programme implementation*, Victoria Zaryabova, Michel Israel

Discussion: *Policy practice in different countries*

16.00 – Tour in Varna

21.00 – Dinner


23 September, Tuesday

Hall 2

9.00 – 10.30 **Session 2. “Measurement, exposure, modeling, dosimetry”:** *Sources of fields and radiation; Exposure measurement & instrumentation*

Chairmen: Dr. K. Gryz, Dr. R. Findlay

Plenary paper: *The evaluation of far-field and near-field components of the exposure to radiofrequency electromagnetic radiation inside metro infrastructure in Warszawa*, Krzysztof Gryz, Jolanta Karpowicz, Wiesław Leszko

1. *Anthropometric variety in hazards to workers caused by 27 MHz radiofrequency electromagnetic fields*, Patryk Zradziński, Jolanta Karpowicz, Krzysztof Gryz
2. *SAR probe calibrations in the 490 MHz to 750 MHz band*, Ralf Mouthaan, Daniel Bownds, Benjamin Loader
-  3. *Exposure to radiofrequency electromagnetic fields from mobile networking in motor-cars*, Tarmo Koppel, Mikko Ahonen

10.30 – 11.00 Coffee break

Hall 2

11.00 – 12.30 **Session 2. “Measurement, exposure, modeling, dosimetry”:** *EMF dosimetry; Modeling human body for irradiation studies*

Chairmen: T. Barmuller, Prof. N. Rubtsova

Plenary paper: *Near field radiofrequency electromagnetic exposure assessment*, Nina Rubtsova, Sergey Perov, Olga Belaya, Quirino Balzano, Niels Kuster

1. *New surface-based models of the human body for very high resolution electromagnetic dosimetry*, Richard Findlay
2. *Modelling human exposure to 1 to 30 MHz plane-wave fields*, Benjamin Loader
3. *SAR-tick and other industry information initiatives on EMF exposure and mobile devices*, Thomas Barmueller
4. *Specific absorption rate assessment of very-high frequency RF portable transmitters*, Nina Rubtsova, Sergey Perov, Elena Bogacheva, Quirino Balzano, Niels Kuster

9.00 – 12.30 **Poster Session 2. “Measurement, exposure, modeling, dosimetry”:**

- ✓ *Radiofrequency portable transmitters exposure*, Dominique Picard, Abdelmadjid Djermoun, Joël Legrand (16)
- ✓ *SAR measurements probe sensitivity function of the dielectric properties of the tissue equivalent liquid*, Dominique Picard, Hamidou Balde, Mohammed Serhir (17)

- ✓ *Real time display of the power emitted by a mobile phone by means of an individual indicator*, Dominique Picard, Joël Legrand (18)
- ✓ *GSM mobile phones exposure: turning on and extinction of the phone*, Dominique Picard (19)
- ✓ *Comparison of methods to define power line and substation Busbar Wire Capacitances in electric field calculation task*, Oleksandr Okun, Leena Korpinen (26)
- ✓ *Possibility of decreasing the 50 Hz electric field exposure with different jackets*, Leena Korpinen, Rauno Pääkkönen (29)
- ✓ *Preliminary measurements of smart meter electromagnetic field (50-100 kHz) emissions in Finland*, Rauno Pääkkönen, Marko Lundström, Jari Mustaparta, Leena Korpinen (30)
- ✓ *Exposure to RF fields during the remote readings of the smart meter in Finland*, Rauno Pääkkönen, Marko Lundström, Jari Mustaparta, Leena Korpinen (31)
- ✓ *The development of the Maxwell surface-based human model and calculated induced electric fields from exposure to electric and magnetic fields*, Richard Findlay (51)
- ✓ *The material for planning system electromagnetic monitoring of pollution environment on example Moscow region*, Oleg Grigoriev, Michael Maslov, Yuri Spodobaev, Viktoria Alekseeva, Anastasia Prokofyeva (53)
- ✓ *Assessment of SAR and parameters of mobile phone models*, Gabriela Atanasova, Nikolay Atanasov (58)
- ✓ *Improvement of experimental system for tracking the threshold of current perception*, Yoshitsugu Kamimura, Akira Yamashita, Madoka Yamazaki, Setsu Enomoto, Yoshikazu Ugawa (59)
- ✓ *EMF meters validation in situ*, Pawel Bienkowski, Hubert Trzaska (74)
- 🏠 ✓ *Numerical model of human homogenous head with metallic glasses applied in bluetooth application*, Pawel Bienkowski, Pawel Cala (77)
- 🏠 ✓ *Electromagnetic field from mobile telephone systems*, Pawel Bienkowski, Bartłomiej Zubrzak (78)
- ✓ *Stray ELF magnetic fields of laboratory equipments: a possible co-exposure conducting experiments on cell cultures*, Iván Gresits, Péter Pál Necz, Gábor Jánossy, György Thuróczy (80)
- ✓ *FEM analysis for implantable cardiac pacemaker EMI triggered by wireless power transfer coils*, Takashi Hikage, Taisuke Ono, Masami Shirafune, Toshio Nojima (90)
- ✓ *Real-time signal analysis for power versus time evolution assessment of mobile phone radiation in the calling initiation period of the GSM versus UMTS communications*, Simona Miclaus, Paul Bechet (92)
- ✓ *Measurements of magnetic fields and contact currents produced by domestic induction hobs*, Hiroo Tarao, Leena Korpinen, Noriyuki Hayashi, Katsuo Isaka (97)

12.30 – 13.30 Lunch

Hall 2

13.30 – 15.30 **Session 3. “Human exposure standards”**: *New European Standards for EMF and Optical Radiation*

Chairmen: Dr. J. Karpowicz, Dr. C. K. Chou

Plenary paper: *IEEE EMF exposure and assessment standards activities*, C. K. Chou

1. *The role of computational dosimetry in the assessment of compliance with the EMF Directive 2013/35/EU*, Richard Findlay

2. *Health surveillance according to the new EU Directive 2013/35/EU: Possible Criteria*, Fabriziomaria Gobba, Leena Korpinen
3. *Electromagnetic fields hygienic regulation in Russia. Ways of international harmonization*, Igor Bukhtiyarov, Nina Rubtsova, Yuriy Paltsev, Larisa Pokhodzey
4. *Latin American standards for non-ionizing radiation (NIR) from telecommunication services*, Victor Manuel Cruz Ornetta

15.30 – 16.00 Coffee break

Hall 2

16.00 – 17.30

Round table: *Implementation of the European Directives 2013/35/EC for occupational exposure to EMF; 2006/25/EC for occupational exposure to optical radiation in Member states*

Plenary paper: *The critical review of various measures used in international guidelines and European Directive 2013/35/EU to characterize the level of direct and indirect hazards caused by electromagnetic fields exposure*, Jolanta Karpowicz, Krzysztof Gryz

- 🏠 *A questionnaire to determine stakeholders' readiness to new legislation on occupational exposure to electromagnetic fields*, Tarmo Koppel

Discussion on practical implementation of EU Directive 2013/35/EU in Member states

23 September, Tuesday

Hall 3

9.00 – 10.30 **Session 4. "Biophysics and biology":** *Biophysical basis of EMFs interaction; Laboratory investigations; Behaviour sensitivity to EMFs / Low dose exposures*

Chairmen: Prof. M. Markov, Prof. S. Ayrapetyan

Plenary paper: *Study of the role of cell hydration in realization of biological effects of non-ionizing radiation in isolated environmental module*, Sinerik Ayrapetyan, Robert Simonyan, Sedrak Barseghian, Lilit Vardanyan, Naira Baghdasaryan.

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 1. *The cognitive side of electromagnetic hypersensitivity*, Mael Dieudonne
 2. *Age-dependent magnetosensitivity of rats brain cortex and heart muscle tissues*, Lilia Narinyan, Anna Nikoghosyan
 3. *Every observed RF biological effect must have a reason: dosimetric consideration*, C. K. Chou

10.30 – 11.00 Coffee break

Hall 3

11.00 – 12.30 - **Session 4. "Biophysics and biology":** *static and pulsed MFs; ELF*

Chairmen: A. Locasto, Prof. T. Kalkan

Plenary paper: *The effects of extremely low frequency electromagnetic fields on mutation induction in mice*, Yuri E Dubrova, James W Wilson, Zenon Sienkiewicz, Jackie Gillan

1. *Iron status in wheat seedlings in response to static and electromagnetic fields*, Faezeh Ghanati, Atefeh Payez, Parviz Abdolmaleki
2. *Effects of horizontal and vertical pulsed magnetic field in diabetic rats*, Isil Ocal, Tufan Mert, Ismail Gunay
3. *Effects of exposure to electromagnetic field on growth plate in rats*, H. Ozlem Nisbet, Aysegul Akar, Cevat Nisbet, M. Yavuz Gulbahar

Hall 3

9.00 – 12.30 **Poster Session 4. “Biophysics and biology”**: *Low dose exposures,*

Biophysical basis of EMFs interaction; Laboratory investigations; static MFs

- ✓ *The Devaytkov law and experiments of s. Motzkin, Yu.P. Chukova, A.G. Kireeva (7)*
- ✓ *The effect of low-frequency magnetic field on the brain magnetic activity, Irina Sinelnikova, Yevgeniya Lobkayeva (10)*
- ✓ *The cumulation of bioeffects produced by non-thermal electromagnetic fields, Svetlana Lukyanova, Nina Karpikova, Oleg Grigoriev, Viktoria Alekseeva, Anastasia Prokofyeva (52)*
- ✓ *Differential responses of mono- and dicot plant seeds to magnetized water, Faezeh Ghanati, Rezvan Khanmohammadi (73)*
- ✓ *Experimental data processing for bioeffects of electromagnetic radiation in different frequency intervals, Yu.P. Chukova (20)*
- ✓ *Investigation on the effect of Static Magnetic Field on cancer and normal cell lines, Jaber Zafari, Fatemeh Javani Jouni, Amir Jalali, Mohammad-Javad Khodayar, Parviz Abdolmaleki (37)*
- ✓ *Static magnetic field increase the effect of gamma ray on cell cycle progression in Hela, Mohammad Satari, Parviz Abdolmaleki, Hossein Mozdarani, Nazanin Haghghat (42)*
- ✓ *Static magnetic field and high natural radioactivity on the gene expression and activity of catalase in Vicia Faba, Nazanin Haghghat, Parviz Abdolmaleki, Faezeh Ghanati, Mehrdad Behmanesh, Mohammad Satari (43)*
- ✓ *Investigating the impacts of static magnetic field on cell viability and cell cycle progression in human Mesenchymal Stem cells, Maryam Sadri, Parviz Abdolmaleki, Saeid Abroun, Bahr Beiki, Fazel Samani (45)*
- ✓ *Static magnetic fields increase Calcium influx and inhibit induced apoptosis in bone Marrow Stem cells of rat, Amir Sabet, Parviz Abdolmaleki, Seyed Javad Mowla, Faezeh Ghanati (50)*

12.30 – 13.30 Lunch

Hall 3

13.30 – 15.30 **Session 4. “Biophysics and biology”**: *dielectric properties; RF; millimeter waves; ionizing radiation*

Chairmen: Prof. C. Sammut, Dr. G. Thuroczy

Plenary paper: *German research on exposure and biological effects of Tetra radiofrequency signals, Blanka Pophof, Christof Bodendorf, Heidi Danker-Hopfe*

1. *Dielectric properties of high water content biological tissues: the importance of accurate knowledge of dielectric properties, Lourdes Farrugia, Charles V Sammut, Louis Zammit Mangion*
2. *Comparison of electrical properties between normal and pathological tissues in rats, Mahmut Alp Kilic, Melike Erdogan, Mehmet Cayoren, Nuray Kepil, Sibel Erdamar Cetin, İbrahim Akduman, Tunaya Kalkan*
3. *Waveguide methods for measuring the dielectric properties of biological materials, Lourdes Farrugia, Charles V Sammut, Louis Zammit Mangion*
4. *Radiofrequency radiation induced impairment of spermatogenesis, DNA damage and oxidative stress in mice, Neelam Pandey, Sarbani Giri*



Hall 3

13.30 – 15.30 **Poster Session 4. “Biophysics and biology”:** Pulsed MFs, ELF, IF, RF; millimeter waves; ionizing radiation

- ✓ *The influence of weak elf magnetic fields and weak pulsed hnmr magnetic field signals on growth parameters of Lemna Minor, Niko Gorjup (75)*
- ✓ *Evaluation of the pulsed magnetic field on ATP-sensitive potassium channels in diabetic rats, Isil Ocal, M. Bertan Yilmaz, Tufan Mert, M. Ali Erkoc, Turan Tufan (82)*
- ✓ *Correction of an organism functional state by a low-frequency magnetic field, Natalia Devyatkova, Yevgeniya Lobkaeva (11)*
- ✓ *Potential anticancer effect of exposure in low-frequency EMF, emitted by an experimental apparatus, Anastasia Velalopoulou, Ioannis Verginadis, Georgios Tatsis, Angelos Evangelou, Panos Kostarakis (46)*
- ✓ *Inhibitory effects of low thermal radiofrequency radiation on some physiological parameters of Zea mays seedlings growth, Mihaela Racuciu, Cora Iftode, Simona Miclaus (3)*
- ✓ *Effect of intermediate frequency (IF) magnetic field on DNA repair after damage caused by ionising radiation, Györgyi Kubinyi, József Bakos, György Thuróczy (76)*
- ✓ *Acute exposure to LTE mobile phone exposure does not affect thermal pain threshold of young healthy human volunteers, Zsuzsanna Vecsei, György Thuróczy, István Hernádi (83)*
- ✓ *Electromagnetic field radiations emitted from mobile phone impair organogenesis and development in chick embryo, Ved Parkash Sharma, Upma Bagai, Rk Kohli (91)*

15.30 – 16.00 Coffee break

Hall 3

16.00 – 17.30 **Session 5. “Medical Applications of EMF and UV”:** Electroporation – Science and Medical Application

Chairmen: Prof. Andrzej Wieraszko, Dr. L. Vesselinova

Plenary paper: Magnetotherapy – whether, when, where, Lyubina Vesselinova, Marko Markov

1. *Comparing MVH gene and protein expression in differentiated and undifferentiated cells derived BMSCs during BMP-4 and 4mT SMF treatments, Fatemeh Javani Jouni, Jaber Zafari, Parviz Abdolmaleki, Mehrdad Behmanesh, Mansoure Movahedin*
2. *Biochemical effects observed in the peripheral nerve following direct current stimulation, Andrzej Wieraszko, Zaghoul Ahmed*
3. *Modulation of Ca²⁺ accumulation by neuronal preparations exposed to direct current stimulation, Andrzej Wieraszko, Zaghoul Ahmed*
4. *Thermo-induced modifications and selective accumulation of glucose conjugated magnetic nanoparticles in vivo in rats - increasing the effectiveness of magnetic assisted therapy, Lubomir Traikov, Ivan Antonov, Lyubina Vesselinova, Radka Hadjiolova, Julian Raynov*
5. *Advanced ultrasound image processing: new approach in treatment of tendon injury with electromagnetic fields, Richard Parker, Marko Markov*

Hall 3

16.00 – 17.30 **Poster Session 5. “Medical Applications of EMF and UV”:**

- ✓ *Efficacy and safety of an extremely low frequency electromagnetic field (Magnet-Xpro) in patients affected by Sudeck’s disease*, Emilio Battisti, Antonietta Albanese, Mario Rigato, Claudio Corallo, Nicola Giordano (9)
- ✓ *Advantages of the personalized approach to the low-frequency magneto-therapy in complex treatment of the arterial hypertension*, Evgeniya Lobkaeva, Nataliya Devyatkova, Vasiliy Fedotov, Andrey Maslov, Vasiliy Krylov (12)
- ✓ *In vitro effects of extremely low frequency electromagnetic fields ELF and Tammef on human primary osteoblast proliferation*, Antonietta Albanese, Laura Bianciardi, Emilio Battisti (21)
- ✓ *Fem-driven parameter optimization of a fully functional prototype for establishing electrochemotherapy in interstitial usage*, Andreas Ritter, Philipp Bruners, Thomas Schmitz-Rode, Joachim Pfeffer, Martin Baumann (86)
- ✓ *Low field transcranial magnetic application: chronobiological treatment of Ictus*, Jose Luis Bardasano, Arranz Jose Luis, Alvarez-Ude Juan (98)

24 September, Wednesday

Hall 2

9.00 – 10.30 – **Session 6. “Occupational health and safety”:** *Occupational exposure to EMF and UV radiation; Occupational health and safety concerning EMF and UV exposure*

Chairmen: Prof. F. Gobba, Prof. N. Rubtsova

Plenary paper: *Occupational and environmental exposure to extremely low frequency-magnetic fields in a large group of workers*, Fabriziomaria Gobba, Paolo Rossi, Giulia Bravo, Gian Marco Contessa, Leena Korpinen

1. *Cancer risks due to high frequency radiation from a military base in Cyprus*, Andreas Neocleous, Andreas Papaxenopoulos
2. *Exposure of radiographers to static magnetic fields during daily MRI procedures*, Julian Bonello, Charles V Sammut
3. *Development of new aspects of power frequency electromagnetic field safety*, Nina Rubtsova, Andrey Tokarskiy
- 🏠 4. *A new method for the evaluation of cumulative solar radiation exposure in outdoor workers*, Alberto Modenese, Fabio Bisegna, Massimo Borra, Carlo Grandi, Franco Gugliermetti, Andrea Militello, Fabriziomaria Gobba

10.30 – 11.00 Coffee break

Hall 2

11.00 – 12.30 - **Session 6. “Occupational health and safety”:** *Occupational exposure to EMF and UV radiation; Occupational health and safety concerning EMF and UV exposure*

Plenary paper: *The BMI influence of the physiotherapy personnel morbidity by long-term professional EMF exposure*, Lyubina Vesselinova (89)

- 🏠 1. *Subjective symptoms and their evolution in a small group of magnetic resonance imaging (MRI) operators recently engaged*, Giulio Zanotti, Fabriziomaria Gobba, Guido Ligabue
2. *The limitations in the use of ELF rms-value magnetic flux density data loggers in the evaluation of industry workers exposure to magnetic field*, Jolanta Karpowicz, Krzysztof Gryz

- 🏠 3. *Occupational exposure of personnel operating military radio equipment: measurements and simulation*, Annamaria Paljanos, Simona Miclaus, Calin Munteanu
- 4. *The comparison of movement-related component of magnetic field exposure of radiographers and nurses involve in diagnostic by the use of 1.5 T MRI scanner*, Jolanta Karpowicz
- 5. *Bulgarian traditions and experience in physiotherapy risk assessment*, Michel Israel, Lyubina Vesselinova, Marko Markov

Hall 2

9.00 – 15.00 **Poster Session 6. “Occupational health and safety”**

Poster Session 7. “Public health”

- ✓ *Characterization of occupational EMF exposure in power plants, substations and transmission & distribution systems*, Efthymios Karabetsos, Nektarios Skamnakis, Dimitrios Xenoulis, Georgios Gourzoulidis, Nikolaos Skourias (54)
- ✓ *Occupational health risk study: possible interplay of biological effects of RF EMF and smoking habit?*, Dabala Dana Camelia, Surcel Didi, Surducun Emanoil, Surducun Vasile, Neamtu Camelia (61)
- ✓ *Stress and fatigue in operators under radiofrequency electromagnetic radiation and shift work*, Katya Vangelova, Michel Israel, Desimira Velkova (99)
- ✓ *Example measurements of exposure to ELF magnetic fields on the metro station in Finland*, Leena Korpinen, Artturi Lähdetie, Åke Amundin, Hannu Piippo, Lauri Sydänheimo (28)
- ✓ *The relationship between a worker’s height and weight and internal electric fields induced in the body at 50 Hz for comparison with the EMF Directive 2013/35/EU*, Richard Findlay (40)
- ✓ *Pollution with extremely low frequency electromagnetic radiation in Riga and children health*, Anton Kolodynski, Lalita Oparija (62)
- ✓ *Exposure assessment of magnetic field in dwellings with inbuilt transformer stations in Sofia*, Tsvetelina Shalamanova, Michel Israel, Mihaela Ivanova, Victoria Zaryabova (115)
- ✓ *Public RF exposure around digital television broadcast stations*, Péter Pál Necz, Balázs Gyulai, József Krausz, Tamás Egri, György Thuróczy (79)
- ✓ *Electromagnetic fields in vicinity of LTE base stations*, Blaž Valič, Tomaž Trček, Peter Gajšek (96)

12.30 – 13.30 Lunch

Hall 2

13.30 – 15.00 **Session 7. “Public health”**: *Environmental, public exposure of EMF and UV radiation*

Chairmen: Dr. E. Karabetsos, Dr. M. Ivanova

Plenary paper: *UVR irradiance measurements from artificial tanning devices in Greece*, Aspasia Petri, Efthymios Karabetsos

1. *Assessment of ingestion dose to population in the high background radiation area in India*, Panakal John Jojo, Maria Jose Reebea, A Arunima
2. *UV exposure of the users of sunbeds in Slovenia*, Peter Gajšek, Vesna Tlaker Žunter, Blaž Valič

3. *Legislation on human health protection on using solaria*, Mihaela Ivanova, Michel Israel

15.00 – 15.30 Coffee break

Hall 2

15.30 – 17.30

Round table: *Projects – proposals and ongoing*

Chairmen: Prof. S. Ayrapetyan, Prof. M. Israel

15.30 **Press conference on BG 07:** Programme “Public Health Initiatives” with the financial contribution of the Norwegian Financial Mechanism 2009-2014 and EEA Financial Mechanism 2009-2014: *“Improving control and information systems in risk prevention and healthcare”*

16.30 **Project proposal for the European programme HORIZON 2020:** *“An International Project on Cellular and Molecular Mechanism of Non-thermal Effect of Non-ionizing Radiation and its Dosimetry for Applying Horizon 2020”*

18.00 – Meeting of the Organizing Committee

19.30 – Official dinner and closing ceremony

25 September, Thursday

9.30 – Excursion

26 September, Friday

Departure