Medical Radiological Research Center of Ministry of Health, Prof. V. Petin: A simple mathematical model of simultaneous combined action of environmental agents has been proposed to describe the synergistic interaction of microwave and high ambient temperature treatment on animal heating. The prediction of the model was shown to be consistent with experimental data on rabbit heating.

Federal Medical Biophysical Centre of Federal Medical Biological Agency of Russia, Department of Non-Ionizing Radiation, Dr O. Grigoriev, Dr A. Merkulov, Prof. S. Lukyanova: Non-thermal level EMF as nonspecific stimulus for central nervous system. EMF RF non-thermal levels is stimulus for central nervous system to which the applicable laws of the physiology of non-specific biological effect, adaptive response and ways to strengthen the biological significance of a weak stimulus, depending on the exposure conditions can be regarded as an irritant from weak to strong degree. The conditions, when the reaction may be manifestations of central nervous system, leading to neurosis, are described. Boundary conditions for possible cumulative biological response CNS effects of non-thermal EMF intensity were defined. Our datas confirms the necessity for integrated analysis of each situation when assessing the risk of low intensity EMF exposure on human health.

Has been made analysis of current state of researches of nanosecond pulses electroporation An overview of methods for controlled cell membranes electroporation with electromagnetic pulses of nanosecond duration. The obtained results can be used in planning and conducting of further research on electroporation process and its application in medicine and biology, including the treatment of cancer.

Postgraduate education on hygiene of non-ionizing radiation. Program of postgraduate education on hygiene of NIR was developed and now introduced for sanitary doctors, physicists, engineers of the testing laboratories, ecologists and occupational safety specialists. The training course lasts for 2 weeks. Special attention is focused on familiarization with the new methods and instrumentation for measurements and dosimetry of NIR.

Institute of Medical and Biological Problems, Russian Academy of Science, Dr K. Trukhanov: Influence of modelled hypomagnetic conditions of the distant space flight on the rhythmic organization behavioural activity of rats has been studied. The GMF was attenuated at 700-1000 times. Influence of simulated hypomagnetic conditions of deep space on embryo development of the japanese quail. The GMF was attenuated at 80-100 times.

Dr. A. Shafirkin: It was made a retrospective analysis and juxtaposition results of experimental research on the direct and adverse delayed effects chronic exposure of ionizing radiation (IR) and non-thermal electromagnetic fields (EMF) of superhigh frequency (SHF) was leaded. A variety and rate development of non-cancer diseases occurred in humans as a result of chronic exposure to IR or to electromagnetic radiation (EMR) low intensities have been compared also. A new approaches to standardization a chronical non-thermal action of SHF EMF, other physical and chemical factors are offer. They based on applying into practice of quantitative indicators including a generalized logarithmic index for description of the functional systems conditions, compensatory reserves and stability of an organism.

Institute of General Physics, Russian Academy of Science, Radiobiology Lab, Dr V. Binhi: The experimental work in the included the five-year series of studies on the action of the hypomagnetic field (HMF) on the human organism. Probability distributions of the values of magnetic effects have been calculated from the results of about 120 thousand single trials during psychological testing of 40 people under normal conditions and exposure to a 100-fold weakened geomagnetic
field. It has turned out that the HMF has a slight but statistically significant effect (on total average, nearly 2% at \(p < 0.01\)) on the accuracy and speed of performing psychological tests. The individual reactions in separate tests reached 20–40%. Two types of the distributions were shown to be attributed to (a) the individual reactions to HMF and (b) the batch magnetic effect on the set of mean individual reactions. The total 2% average value is not an informative characteristic of the batch magnetic effect. Such is the shape of the distribution of the individual means, which has a standard deviation much greater than the total average.

**Dr I. Belyaev:** DNA damage, apoptosis and gene expression in human hematopoietic stem cells under exposure to microwaves from mobile communication: no DNA damage or apoptosis has been detected in experiments with 1-h exposure. The only exclusion is a statistically significant effect of RF exposure of CD34- cells extracted by generally accepted protocol with NH\(_4\)Cl and exposed at 4 mW/kg. Our preliminary data indicate that prolongation of exposure from 1 to 2 hours may result in RF-induced DNA damage. Thus, in follow up experiment the duration of exposure should be increased. Importantly, experiments performed with lymphocytes from infants and adults have shown significant increase in RNA expression. The follow up experiments may provide information on RF-sensitive genes. It would be especially important to validate whether oncogenes, microRNA, and oncogenic gene fusions are induced in stem cells.

**State Marine Technical University, Research Laboratory of Electromagnetic Safety, Prof. V. Nikitina:** In 2011 the laboratory has conducted research of electromagnetic fields generated in the environment of mining and metallurgical industrial North. So laboratory studies of EMF served on ships equipped with modern marine electronics.

**Center for Electromagnetic Safety, Dr O. Grigoriev, Dr A. Merkulov:** Evaluation of electromagnetic exposure from the mobile telecommunication base stations. Results of the long-term electromagnetic situation observation at the territories adjoined to mobile communication base stations in the Central Region of Russian Federation are presented. They could be used for the RF EMF assessment in hygienic and epidemiological studies and also for the territory zoning for the perspective building and telecommunications development. Since 1997 totally measurements were made on 1347 sites, 169 sites were controlled periodically (one time in one to three years).

<table>
<thead>
<tr>
<th>Measured values</th>
<th>Equivalent plane wave power density (S_{eq}) μW/cm(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building roofs where BS antennas are installed</td>
<td>Premises in building where BS antennas are installed</td>
</tr>
<tr>
<td><strong>Averaged values (95 % CI)</strong></td>
<td>4.72 (3.10–7.26)</td>
</tr>
<tr>
<td><strong>Maximum values (95 % CI)</strong></td>
<td>244.10 (154.02–386.87)</td>
</tr>
</tbody>
</table>

**Federal Medical-Biological Agency of Russia, PR Department, Mrs S. Marchenko:** Number of EMF safety topics calls to the PR Department in 2011 increased by 30% compared to 2010. Modern society couldn’t give up modern communication devices, so you need to grow a culture of purposeful life.

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