

### **Session 3: GENERAL RESPONSE TO EMF EXPOSURE**

#### **NONSPECIFIC INITIAL ADAPTIVE REACTION OF THE BRAIN TO VARIOUS ELECTROMAGNETIC FIELDS**

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The scientific-technical revolution of our day is associated with the wide introduction of various electromagnetic fields /EMF/ in almost every aspect of life, in industry, in medicine and everyday life. Policy recommendations are suggested for electromagnetic pollution prevention and control in Russia in the context of recent developments and WHO guidelines, as well as the international perspective (Demin, 1997).

It should be noted, that the EMF from static (SMF) and alternating (AMF) magnetic and electric fields, and up to the light range involve non-ionising radiation and are a significant factor in the natural and anthropogenic environment. Theoretical studies of their biological action help in solving the practical problems of ecology, hygiene, therapy and diagnostics. However, from our point of view, application of artificial EMFs as stimulators in neurophysiological laboratories opens up new prospects for the solution of theoretical problems, connected with the study of the perception mechanisms of conscious and unconscious stimuli (Kholodov, 1966, 1994, 1998).

At the beginning of the century there already was an indication that the nervous system /NS/ played an important role in body reactions to EMF. At present the experimental models in vitro predominate over models in vivo (Adey, 1990).

The goal of this report is to present some results of investigation in the laboratory of electromagnetic neurophysiology. We used four methods: psychophysical, electrophysiological, morphological and behavioural, - and also four EMFs: microwaves /mm- and cm-ranges/, pulse magnetic field /PMF/, CMF and AMF/ and magnetic shielding room /MSR/. In Table 1 we can see the forms of EMF, its intensity, frequency, duration and the device used.

The first type of initial reaction of NS to EMF was discovered when we used the psychophysical or electrophysiological method during local stimulation /hand or head/ of any EMF /see table 1/. In comparison with the human initial sensory reactions to usual stimuli /light, sound/ or to AMF exposure of head