

**ABOUT MEASURES OF PROTECTION OF THE POPULATION  
FROM ELECTROMAGNETIC DANGER OF A RADIO-FREQUENCY  
SPECTRUM OF MOBILE COMMUNICATION SYSTEMS**

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*Recent years have been marked by a rapid development of technologies related to the use of electromagnetic fields and radio frequency radiation (RF EMR) in production and the environment. These systems, designed to transmit information, are used in various sectors of the national economy.*

*electromagnetic fields, radiation, radio frequency range*

Scientists have long proven the adverse effects of electromagnetic fields and radiation on biological organisms, including humans. Electromagnetic fields and radiation cause serious changes in people's health status, increasing the number of cases of hypertension and myocardial infarction. Electromagnetic fields and radiation affect the central nervous system, which leads to mental disorders, memory loss; on the reproductive system, causing impotence, premature birth, and congenital deformities. Recent studies indicate the development of oncological diseases when exposed to electromagnetic fields and radiation. The person does not have special sense organs that perceive electromagnetic fields and radiation, which is a factor of additional danger, since a person cannot avoid it.

The problem of industrial and environmental EMR RF pollution is of international importance. The whole world is looking for solutions. Intensive work is carried out in the USA, Poland, Germany, Great Britain, Sweden (Environmental Protection Agencies, Institutes of Labor and

Environmental Protection). Specialists from different countries are united in the framework of international organizations - the World Health Organization (WHO), the International Association for Radiation Protection (SRA), the International Committee for Protection against Non-Ionizing Radiation (UMIR) and the European Committee for Electromagnetic Compatibility (CEMP).

It should be noted that the standards for maximum permissible levels for RF EMF in different countries of the world relate to base stations, however, when using mobile phones, the brain has become a critical organ. At the same time, many specialists neglect such radiobiological concepts as the concept of a critical organ or critical system, the possibility of accumulation of adverse effects, and residual damage (long-term consequences). The daily exposure of the brain to microwave EMR did not attract the attention of scientists and hygienists. Many countries completely disregard the precautionary principle proposed by WHO [1]. Children are included in the risk group for the first time in the entire period of civilization [2-3-3].

The main radiobiological arguments are not taken into account in order to reasonably assess the dangers of mobile communication for the population. This is happening against the background of periodically appearing publications that mobile communication is not dangerous for public health. However, it wasn't enough. Attempts are made to argue that mobile communication cannot have a negative impact on children.

In Uzbekistan also attaches great importance to this problem. Enterprises and organizations of the Ministry of Information Technology and Communications Development, Ministries of Health, Electric Power, Defense, Civil Aviation, etc. are puzzled by the solution of the problem.

Various types of technical means, which have non-ionizing radiation, change the electromagnetic environment in the production and environment. The development of science and technology leads to the creation of equipment and devices, the operation of which is accompanied by the emission of electromagnetic energy. These include radio and television

broadcasting equipment, mobile and personal radio communication systems, computers and video equipment, power equipment, modern household appliances, etc. But technical means, designed to control technological processes of information transmission - radio communications, radio broadcasting and television, radiating energy into the environment and used in various industries are the main sources of electromagnetic pollution of the industrial and environmental environment.

Currently, the electric power industry, communications and other industries are being introduced with technical means of monitoring and controlling technological processes, transmitting information by means of telecommunications, which use the process of radiating electromagnetic energy of radio frequencies. However, in the electric power industry enterprises, the provision of electromagnetic safety is understood as protection against industrial frequency electromagnetic fields.

For branches of the national economy, the emergence of new technologies was marked by a solution to the problem of ensuring electromagnetic safety using the radio frequency spectrum.

The man-made electromagnetic background of the environment is increasing exponentially, mainly due to base stations. The transition to the G5 standard will lead to a significant increase in the number of base stations and additional radiation exposure. The G5 standard assumes the use of base stations of high frequencies for base stations - 24-26 GHz and higher (millimeter-wave EMR range). G5 standard antennas are planned to be installed in residential buildings and schools.

As of today, there is a round-the-clock and lifelong total exposure to microwave EMR of the entire population, both with different frequencies and with a wide range of modulations. A sharp increase in the level of this impact is expected in the future.

Special attention is paid to the problem of electromagnetic contamination not only of production personnel of enterprises, but also of the population:

\* Increase the number of technical means by developing new frequency bands and introducing new technologies in the transmission of information, expanding the

radio network, radio broadcasting, increasing television broadcasting channels and other services.

\* Increase the energy potentials of technical means by increasing the power of transmitters, increasing the efficiency of transmitting antennas and their territorial concentration.

\* Development of a network of non-state radio, broadcasting and television enterprises.

\* Replacing wired broadcasting in rural areas with over-the-air.

At the same time, the use of various means of telecommunications for informatization and the population is a powerful means of ideological influence on the population of a country and a particular region. The increase in the level of electromagnetic radiation in the region is a consequence of the increased informatization of the population by increasing the capacity, the number of radiating means, the development of new frequency bands and the introduction of new means and communication systems. Также к возрастанию An increase in the production capacity of enterprises also leads to an increase in the intensity of exposure to radiation and other adverse environmental factors *увеличение производственных мощностей предприятий*. This may include an uncomfortable *неудобный* microclimate - an increase in temperature, a decrease in humidity, industrial noise and vibration, and a general deterioration in the state of labor protection. Creating a qualitatively new system for improving the level of labor safety, minimizing the adverse effects of industrial and environmental factors, and reducing the morbidity and mortality of personnel is a time requirement. This can be achieved by carrying out complex work in production conditions, developing promising foundations and new methodological approaches, creating a structure for ensuring reliable operation and maintaining the health of personnel, *внедрением последних* and implementing the latest scientific achievements *и достижений* in the field of modern processes and technologies.

The imperfection of many technologies used, the impossibility of excluding the process of creating electromagnetic fields and radiation from the technologies

of monitoring, controlling and transmitting information, pose a specific and relevant problem for the industries of ensuring electromagnetic safety. The essence of the problem is to protect people in the industrial and environmental environment from the adverse effects of electromagnetic fields and radiation of various frequency ranges under various types of exposure.

Human protection from the adverse biological effects of EMF is based on the following main areas:

- organizational measures;
- engineering and technical measures;
- medical and preventive measures.

Solving the problems of occupational health and safety in the operation of television stations is a system, that consists of a set of normative and methodological documents and technical means that ensure the development and adoption of scientifically based decisions to protect people from the harmful effects of electromagnetic radiation from television stations. Ensuring the electromagnetic safety of enterprises is unthinkable without creating a system of methodological documents for monitoring RF EMR levels, technical aspects of setting up and conducting studies on regulating maximum permissible radiation levels, and standard methods for hygienic assessment of enterprise equipment.

### **List of sources used**

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