Part 5

DECREASE IN PHYSICAL FACTORS IMPACT FROM POWER OBJECTS ON ENVIRONMENT

5.1. Decrease in impact of electric and magnetic fields of the industrial frequency on the person

General information on impact of electric and magnetic fields

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Main factors of a possible impact of electricity transmission system on the person are electric and magnetic fields (EFs and MFs) at frequency of 50/60 Hz (industrial frequency - IF). It should be mentioned that such frequency range concerns a superlow-frequency range, which includes ranges of 30-300 Hz (according to the International Radio Regulations). It is also necessary to take into account that at high levels of EFs, a possible additional impact of electric discharges, drain current and capacitive currents on a person can occur. And also at the performance of some works in the field of electric power engineering, particularly, works with a direct contact to current carrying energized parts, factors of corona discharge (noise, air ionization, nitrogen oxides, and electromagnetic radiation of radio range spectrum) make an additional influence on the person.

Sources of EMFs of IF are different types of electrical facilities such as high voltage substations and power lines, all the devices that include current lines: electric transport, industrial and medical equipment, home appliances and etc. Above all, the personnel from electricity supply networks, supporting open dispensers and air power lines of super high and ultrahigh voltage, and also the personnel operating cable power lines, is affected by industrial influence of EMFs of IF.

Population can be influenced by EMFs of IF that are produced by different technical devices and products. In open air there are air and cable power lines (APLs and CPLs), transformer substations and dispensers, and also electrical transport. In living accommodations, above all, there are household appliances: refrigerators, electrical cookers, irons, vacuum cleaners, shavers, hairdryers, kettles, coffee machines, coffee mills, electrical heat pads, electrical blankets, and in garages and at dachas there are electric instruments, plumps, etc. Besides, in living and social buildings the person can be influenced by EMFs of IFs, produced by nearby APLs and CPLs, dispensers and transformer substations and other stationary sources.

Availability of various sources of EMFs of IF, widely used in our life, leads to that at home, child welfare, academic and medical institutions their levels becomes close to the professional ones.

From midfifties the intensive progress of electric power engineering and introduction of high voltage power lines (HVPLs) became the basis for recording of all the possible aspects of their influence on the person, above all, in conditions of industrial influence.