

## **DISTURBING FREQUENCIES. INTRODUCTION TO FIELD PHYSIOTHERAPY**

(essay)

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**Annotation.** The tasks of electromagnetic therapy, as already formed by the beginning of our century of the field physiotherapy industry, includes not only the development of treatment methods and the creation of equipment for their implementation, but also a comprehensive, thorough and reasoned analysis of pathogenicity factors electromagnetic and magnetic fields with special characteristics, natural or man-made, influencing, as a rule, unauthorized on the human body. So below we will talk mainly about the pathogenic effects on humans of low-intensity fields of infra-low frequencies, then there is less than 16 hertz. It has been shown that not only electromagnetic and magnetic fields, but also other fields, for example, acoustic, tectonic, etc., cause a depressing, anxious state in a person. AND These are the reactions of our body to the factor of influence of infra-low frequencies; it is a kind of “evolutionary memory” of all living things in the evolutionary series since the time of the cataclysms of the still relatively “young” Earth with its unsettled processes. All this is explained below from the perspective of modern knowledge. But here The important question is: what should this knowledge about the bioeffects of information fields be applied to? – the answer is self-evident: in order to exclude this “infracomponent” in the developed methods of electromagnetic therapy. **Key words:** electromagnetic field, magnetic field, infra-low frequency, evolution of life, evolutionary memory.

## **FREQUENCIES THAT HUMAN ALARM. INTRODUCTION TO FIELD PHYSIOTHERAPY (essay)**

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**Abstract.** The tasks of electrotherapy, which was formed as a field of field physiotherapy at the beginning of our century, include not only the development of treatment methods and the creation of equipment for their implementation. It is aimed at a comprehensive, thorough and well-reasoned analysis of pathogenicity factors of electromagnetic and magnetic fields with special characteristics, natural or man-made, as a rule, affecting the human body unauthorized. The article also deals with the pathogenic effect of low-intensity fields of infra-low frequencies on a person, i.e. less than 16 hertz. It is shown that not only electromagnetic and magnetic fields, but also other fields, for example, acoustic, tectonic, etc., cause a depressing, anxious state in a person. And such are the reactions of our body to the influence factor of infra-low frequencies. There is a kind of “evolutionary memory” of all living things in the evolutionary series since the time of the cataclysms of the relatively “young” Earth with its unstable processes. All this is explained from the perspective of modern knowledge. But the question is important: why should be applied this knowledge about the bio-effects of information fields? The answer is self-evident: in order to exclude this “infra-component” in the developed methods of electromagnetotherapy.

**Keywords:** electromagnetic field, magnetic field, infra-low frequency, evolution of life, evolutionary memory.

**Introduction.** Considering the sanitary and pathogenic effects of low-intensity (non-thermal, non-ionizing) electromagnetic fields on the human body, let us turn to those with frequencies below 16 Hz. Moreover, it does not matter whether it is a carrier frequency or a modulation frequency of much shorter-wave, that is, high-frequency electromagnetic waves and fields - the main thing is that it is present in the spectrum signal affecting a person.

It is well known that vibrations - electrical, magnetic, acoustic, tectonic, pulsed light, and so on - with frequencies from zero to 16 hertz are called infra-low and have a special effect on the receptors of external, field agents in humans: eyes, ears, tactile receptors, biologically active points and reflexogenic zones (Podshibyakin and Zakharyin - Ged) of the skin, possibly directly on the cerebrospinal fluid of the brain, or on its neural structure.

Remember your feelings when piles are being driven under the foundation of a house next to you or “heavy metal” is rushing from a nearby dance floor, when everything under the cranium, including the neocortex, vibrates to the beat brain biomass.

In past years, teachers and professors who presented the relevant sections of physics certainly explained that infralow frequencies of sound waves have a depressing effect on a person, if not completely disturbing. The sound of the sea surf was always cited as an example. Indeed, we, then schoolchildren, vividly imagined this roar of the surf, and even amplified by the sad cries poorly fed seagulls (when there is a storm, their prey, small fish, moves away from the surface of the sea): and ourselves became uncomfortable. **The**

**reason for such a specific effect of** infra-low frequency oscillations, not only, of course, on humans, but also on all living things (remember the behavior of dogs and cats during a thunderstorm) should be sought very far in time, at the first stages of evolution, at stages of biopoiesis. Traditionally

analysis of biopoiesis (the origin of life) begins with the reconstruction of the geochemical situation of the Earth, in first stage of its atmosphere, three to four billion years ago (V.I. Vernadsky, A.I. Oparin, P. Teilhard

Chardin and others). In 1953, evolutionary researchers Stanley Miller and Harold Uhry conducted well-known experience in modeling primary biosynthesis, which has been described in textbooks for over half a century as an evolutionary explanation for the primary origin of essential biomolecules in the reduced (i.e., oxygen-free) environment of the Earth's primary atmosphere, consisting of ammonia, hydrogen and water vapor, with model conditions of the then geological and geophysical

conditions: lightning discharges, ultraviolet radiation, elevated temperature. A visual representation of The geochemistry of the Earth's surface at that time is given by photographs of the Uri-Miller experimental stand (they are published in scientific and popular publications).

In the evolutionary chain from the simplest forms of viruses with units of thousands of nucleotide base pairs in their DNA to *homo sapiens*, the whole memory of three to four billion years of change, bifurcation and possible collapses of the biogeochemistry of the Earth's biosphere (V.I. Vernadsky) is recorded indirectly in human DNA. This is the general biological phenomenon of *evolutionary memory*.

Moreover, this memory is not purely static, informationally fixed; it was transmitted in the chain of evolution as dynamic, actively influencing the physiological and psycho-emotional centers of excitation of the body.

“By combining” together the early biogeochemistry of the Earth and the phenomenon of evolutionary memory, we get those the very effects of anxiety, fear, melancholy, etc., which are caused in people by the influence of fields of different physical nature, but having one common feature: infrared frequency 0-16 Hz, and especially 4-10 Hz. The evolutionary memory that lives in each of us, even those

living in the environment of a super-urbanized metropolis, associates the impact of fields of such frequencies with constant cataclysms relatively recently - in comparison with the million- and billion-year geological periods - of the “calm” Earth: geotectonic fluctuations, accompanied by endless earthquakes, volcanic eruptions of the type that took place already in modern times, on the island. Krakatoa and the expected

super-eruptions of the Toba volcano in Sumatra, giant tsunamis... Add here thunderstorms, also endless, hurricanes and so on. All this brought death to living things: from protozoa to dinosaurs, or whoever What biogeochemical era was the king of beasts supposed to be in? And all this was accompanied by radiation of fields, primarily acoustic, in the infra-low frequency range. And these infralow frequencies also acted in the form of electromagnetic fields, baric fields of changes in atmospheric pressure, fields of soil vibration “underfoot”, and so on.

All this was remembered for hundreds of millions, billions of years, recorded in DNA, everything new, emerging species of living things. And not only evolutionary memory dominates us, moderns, but genetic memory is not allowed to die out in the chain of generations and phenotypic experience: although in on a smaller, much smaller scale, but we also hear the thunder of a thunderstorm, the sounds of hurricanes, torrential rains, residents of the North see auroras, and finally, someone witnesses volcanic eruptions and earthquakes. As for the latest, most formidable manifestations of the still unrestrained Since the geotectonics of the planet, we, living in a zone of seismic stability, sometimes feel this is a menacing shaking of the earth, an echo of the Chisinau earthquake of the early 70s, 3 points reached Moscow.

Evolutionarily, man, as well as the rest of the living world, have, in a certain sense, adapted to disturbing frequencies of natural origin: fear comes and goes. But we are now living in the very peak of the change from one biogeochemical shell of the Earth to another - predicted by a genius V.I. Vernadsky transition from the biosphere to the noosphere. This transition, as we have already experienced, is accompanied by an extremely sharp increase in the “electromagnetic load” on a person. Each of us, especially in big cities, is literally permeated with electromagnetic fields of all kinds of frequencies, modulation, spectra, polarizations, etc. What is one mobile connection worth? So, communications, industry, power generation, etc. - all of this, to one degree or another, is also a source of

electromagnetic oscillations of infra-low frequencies acting on the human body, and their effect absolutely similar in the effects caused to the effects of acoustic and tactile vibrations.

We will not dwell on the mechanism of human perception of electromagnetic waves; for this there is extensive literature on the topic, including numerous published works of our Tula scientific school of biophysics of fields and radiation [1-12]. Let us just note that here as the main receptors, biologically active points and reflexogenic zones of the skin are considered. The most significant thing: these artificial, technically originated infra-low frequencies influence our body, this influence increases all the time and throughout human life itself, and *our body is completely unadapted to their influence!* There is no multi-million dollar for them

chains of evolution. Therefore, failure occurs at all levels of the hierarchy of the body's vital functions. biophysicochemical processes that violate the norms of homeostasis and metabolism. And this is no longer momentary anxiety, fear and melancholy, but something more serious,

irreparable. **Almost 20 years of theoretical and experimental research** [1-13] of our scientific school reliably confirmed the pathogenic effects of low-intensity electromagnetic fields with an infra-low-frequency component of the spectrum of their signals [8, 11]. We will not turn to the results related to oncogenesis, etc., but take one of the studies conducted related to such a popular, now craze for stem cells, namely, experiments on the effects

*electromagnetic* (EM) radiation of extremely high (range 30-300 gigahertz) frequencies, but modulated precisely by infra-low frequencies, on bone marrow hematopoiesis. It is clear that these are experiments on laboratory mammals (Wistar rats). At the same time, the power of the acting EM radiation on a biological object (in experiments it is less than  $0.1 \div 0.3$  mW/cm<sup>2</sup>) plays practically no role here, because the process here is *bioinformational*. That is, this is again a factor of evolutionary memory, the essence – reminder: you can't shield yourself from such radiation! It's sad.

*Red bone marrow* (RBM), due to its physiological and morphological characteristics (cell polymorphism, high proliferative activity of low-differentiated cells, leading to the formation of a large number of cell clones that are highly differentiated in morphological and functional terms, etc.) is therefore already the most vulnerable type of biological tissue in relation to the influence of an external agent - EM radiation. This is evidenced by the results obtained in experiments (staged by Prof. T.I. Subbotina): even a single, less than one hour, EM irradiation of a rat using modulation with frequencies of  $4 \div 10$  Hz intensified an extremely negative process in the CMC, namely: progressive inhibition of the hematopoietic process up to the formation of a hypo- and aplastic state of the BMC by the sixth day - after irradiation. This process

is irreversible, tends to progress, that is, such EM radiation has persistent damaging effect on the functions of the CMC and is a pathogenic biophysical factor.

As for the stem cells in this experiment, already three days after EM irradiation, only single stem cells were present in the BMC smear. This effect also has a completely adequate

biophysical explanation using the model of the influence of a test function on a self-consistent cellular system - force. That moment that frequencies of the infra-low range - modulation of the EM signal - are the frequencies of "biological rejection", which is further evidenced by the fact that at the time of irradiation the rats showed a special mental excitability. Let us note once again: the experiments were carried out in complete silence, EM irradiation only.

Exposure to EM radiation with an infralow modulation frequency causes a maximum aggravation of the sensitivity of brain tissue - the maximum release of calcium ions from it is observed. AND Let us also note: any agent of pathology, including EM irradiation, has the greatest effect on functioning of the cash register as the initial link in a sequential chain of transmission of bioinformation (in this case, negative), caused by blood cells carried throughout the body.

And so on for all organs and systems of mammalian organisms: as the experiment shows, the influence of an external agent in the form of EM radiation, containing an infra-low component in its spectrum, is clearly pathogenic. This is what the evolutionary memory of the past cataclysms of the Earth turns into in modern conditions of technogenic pollution of the human environment, especially with EM fields, from which you cannot shield yourself, you cannot escape anywhere. At least within urban infrastructure.

**Conclusion.** You can philosophize endlessly, especially here, where, according to the Russian custom of intellectual communication, the unanswered "who is to blame?" invariably arises. and "what should I do?" But you can't escape reality, and reality, unlike virtual philosophizing, is here – right in the yard, on the roof of your house, in the workshops of a neighboring factory, and finally, in the kitchen, which is what the "advanced" housewife - I filled it with all sorts of electric cooking equipment made in China, and indeed any other manufacturer. And only specialists in the field of radio engineering and electronics can say: what frequencies do these kitchen and other gadgets emit? – Yes, and also only if you puzzle them with this question.

However, this is no longer the prerogative of medicine and the science of biology that feeds it (biophysics as well), but of the socio-economic structure of the modern world with its ever-accelerating scientific and technological progress and the action of the macroeconomic law of imposing on the consumer, gently speaking, of little use to him in such a range of electrical installations. Hoping for a government revision of maximum permissible exposure standards is a complex and lengthy matter. But it is extremely necessary.

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