



## THE INFLUENCE OF MAGNETIC FIELDS ON THE HUMAN BODY

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**Abstract:** In the current era of globalization, various gadgets that emit magnetic fields provide benefits to humans but also pose serious health risks. Like all organisms on Earth, the human body possesses its own electromagnetic field, often referred to as a biofield. This article explores how electromagnetic fields affect the internal organs of the human body.

**Introduction:** An electromagnetic field is a physical reality where electric charges interact directly; it is a distinct form of matter. Expressed by the strength (induction) of electric and magnetic fields, J. Maxwell formulated the electromagnetic field theory as a system of equations encompassing all fundamental laws of electromagnetic phenomena. His theory rests on two core ideas: 1) any changing magnetic field generates an electric field, and 2) any changing electric field generates a magnetic field. The first idea is supported by the phenomenon of electromagnetic induction, and the second by H. Hertz's discovery of electromagnetic waves. Under specific conditions, electromagnetic fields can manifest as either electric or magnetic fields. All material objects are composed of atoms with equal quantities of positive and negative charges, and the electromagnetic interaction between these charges defines the properties of all substances (gas, liquid, solid, plasma). Electromagnetic interaction is one of three primary types of physical interactions in nature. When the distribution and motion of charges in space are known, the magnitudes of the electromagnetic fields they generate can be determined.

Electromagnetic fields arise from various sources, including household electrical appliances, radios, cell phones, GPS devices, high-voltage power lines, transformers, cell phone towers, Wi-Fi networks, and other technologies. Additionally, antennas receiving satellite signals are sources of electromagnetic fields. Research has shown that these electromagnetic fields can disrupt immune system functions, impair memory, and negatively affect reproductive organs. Electromagnetic radiation from sources such as high-voltage power lines, cell tower antennas, radio antennas, and household appliances has been found to have adverse effects on human health. For instance, regulatory levels for cell tower antenna radiation, which typically ranges from 900 to 1800 MHz, vary worldwide, with limits in the U.S. set at  $100 \mu\text{V}/\text{cm}^2$ , in Russia at  $10 \mu\text{V}/\text{cm}^2$ , and in Ukraine at  $2.5 \mu\text{V}/\text{cm}^2$ . Exposure to stronger electromagnetic radiation than that generated by humans can lead to health deterioration. Not only are everyday devices like mobile phones and transportation sources of this radiation, but large crowds, emotional interactions, and geomagnetic storms can also generate electromagnetic fields.

-Sources of Negative Electromagnetic Radiation:

-Geopathic zones

-Wireless communication and cell phones

-Computers and laptops

-Televisions-

## Transportation

### -Power transmission lines

The challenge is that these hazards often remain unseen and undetected until health issues arise. Electromagnetic waves impact our vision, brain, digestive system, blood-forming organs, reproductive system, and immune system every day and every minute without us noticing.

### **Effects of electromagnetic radiation on the cardiovascular system:**

Radiation can cause either an increase in heart rate (tachycardia) or a decrease (bradycardia), elevated blood pressure (hypertension), and changes in peripheral blood composition.

### **Effects of electromagnetic radiation on the immune and endocrine systems:**

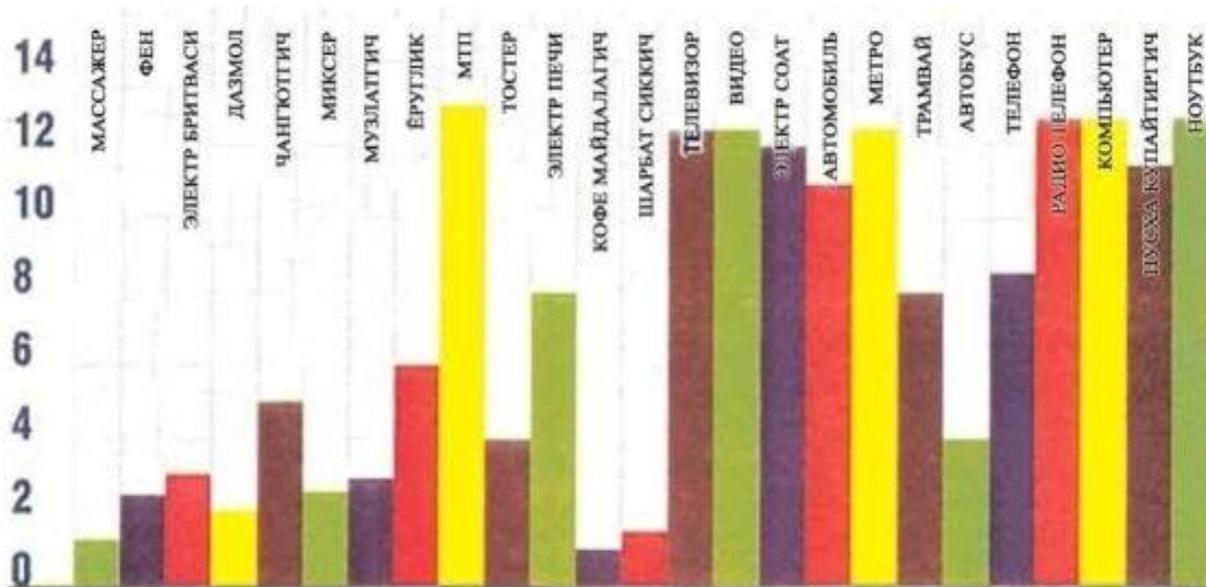
Radiation can also cause disturbances in these systems, leading to weakened immunity, vitamin deficiencies, or even complete vitamin depletion (avitaminosis). Additionally, adrenaline levels may rise sharply, leading to blood clotting issues.

### **Effects of electromagnetic radiation on the nervous system:**

Radiation affects the nervous system more significantly than other systems since the brain is the body's control center. All incoming information is synthesized in the brain, and responses are generated accordingly. Specialists consider the nervous system the most vulnerable to electromagnetic exposure. Electromagnetic fields disrupt cell membrane permeability to calcium ions in the nervous system through a simple mechanism, causing nervous system disorders, chronic headaches, slowed movements, memory impairment, and depression.

### **Effects of electromagnetic radiation on the reproductive system:**

When exposed to electromagnetic radiation, ovaries are particularly sensitive, and sperm motility decreases, potentially leading to an increase in the birth of female infants and congenital abnormalities. Such abnormalities may result from genetic changes, such as alterations in chromosome numbers or structure, or incomplete cell division during reproduction. The brain, thyroid gland, liver, and reproductive organs are all critical zones affected by electromagnetic fields. The diagram below presents common devices that emit radio waves



**Conclusion:** We provide an overview of electromagnetic fields, not to discourage the use of gadgets and everyday electrical devices, but to advocate for their appropriate use. In today's globalized world, it is difficult to imagine life without these devices. Therefore, moderation and proper use are recommended. The human brain sets future goals based on the information it receives, and our actions are rooted in the commands it generates. Using these devices wisely fosters growth. It is beneficial to balance time spent with gadgets by incorporating outdoor activities and reading books in one's field and for self-improvement.

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