

ELECTROMAGNETIC POLLUTION

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Electromagnetic radiation (EMR) is a form of energy released by electromagnetic processes. Electromagnetic waves are produced whenever charged particles are accelerated, and they can subsequently interact with any charged particles. The effects of EMR upon biological systems depend both upon the radiation's power and its frequency.

Radio waves have frequencies from 300 GHz to as low as 3 kHz, and corresponding wavelengths ranging from 1 millimeter to 100 kilometers. Naturally occurring radio waves are made by lightning, or by astronomical objects. Artificially generated radio waves are used for fixed and mobile radio communication, broadcasting, radar and other navigation systems, communications satellites, computer networks and innumerable other applications.

For low-frequency radiation (radio waves to visible light) the best-understood effects are those due to radiation power alone, acting through the effect of simple heating when the radiation is absorbed by the cell. A measure of the heating effect is the specific absorption rate or SAR, which has units of watts per kilogram (W/kg). Despite this opinion among researchers, evidence has accumulated that supports the existence of complex biological effects of weaker non-thermal electromagnetic fields. The World Health Organization has classified radiofrequency electromagnetic radiation as a possible group 2b carcinogen. Ukrainian standards establish regulations of radio band safety for electromagnetic radiation in units of energy flux density in W / m^2 , which guard against thermal and non-thermal damage.

Long-term exposure to high-levels of microwaves, is recognized, from experimental animal studies and epidemiological studies in humans, to cause cataracts.

The effect of mobile phone radiation on human health is the subject of recent interest and study, as a result of the enormous increase in mobile phone usage throughout the world. The WHO added that "to date, no adverse health effects have been established as being caused by mobile phone use." Because mobile phone base stations operate at less than 100 watts, the radiation at ground level is much weaker than a cell phone due to the power relationship appropriate for that design of antenna. Some national radiation advisory authorities have recommended measures to minimize exposure to their citizens as a precautionary approach. The precautionary principle is a risk management policy applied in circumstances with a high degree of scientific uncertainty, reflecting the need to take action for a potentially serious risk without awaiting the results of scientific research.