

Construction Materials - How to Protect Living Organisms from Electromagnetic Radiation

TSAPKO Nataliia^{1, a}, SHABANOVA Galina^{2, b}, LOGVINKOV Sergey^{3, c},
MYRGOROD Oksana^{4, d*} and PIROHOV Oleksandr^{4, i}

¹Research Institution "Ukrainian Research Institute of Environmental Problems", 6, Bakulina Str., Kharkiv, Ukraine, 61166

²National Technical University "Kharkiv Polytechnic Institute", 2, Kyrpychova str., Kharkiv, Ukraine, 61000

³O.M. Beketov National University of Urban Economy in Kharkiv, 17, Marshala Bazhanova str., Kharkiv, Ukraine, 61002

⁴National University of Civil Defence of Ukraine, 94, Chernishevskya str., Kharkiv, Ukraine, 61023

^atsapkonatali@gmail.com, ^bgala-shabanova@ukr.net, ^cSergii.Logvinkov@m.hneu.edu.ua, ^dmir-oksa@ukr.net, ⁱpir.s@ukr.net

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Abstract. The main principles of objects of living nature protection from the influence of electromagnetic radiation have been studied. An analysis of various types of protective screens, structures and materials used for their manufacture was carried out. It is proposed to use special concretes based on barium-containing cement with barium hexaferrite aggregate as structural materials to protect the environment from the effects of electromagnetic radiation.

1 Introduction

The life of a modern person is almost impossible to imagine without the daily use of electricity: electric transport, television, banking, medical equipment, mobile communication, computers and the operation of many other devices are impossible without electricity. However, the use of electrical energy has a reverse side, namely the presence of an electromagnetic field, a special case of which is electromagnetic radiation (EMR).

All life on Earth depends on electromagnetic radiation from the Sun and Earth, which is necessary for photosynthesis in plants or biosynthesis in zooplankton - the main link of the food chain in the ocean [1, 2, 3, 4].

In addition to ionizing radiation, the safety of which is taken care of by the State Atomic Energy Regulatory Commission within the framework of the nuclear and radiation safety regulation system, there is a wide range of radiations, known under the common English name "radiation", which differ in wavelength, intensity and power of energy impact on the environment and biota [5, 6, 7].

The eyes of humans and some animals are adapted to perceive only a separate part of the spectrum of solar electromagnetic radiation - light consisting of the visible parts of a wide range of frequencies [8, 9, 10].

Almost all fossil fuels used by modern society – gas, oil, and coal – are stored forms of energy received from the Sun in the form of electromagnetic radiation millions of years ago.

According to the British encyclopedia, "electromagnetic radiation is a flow of energy that moves at the speed of light through free space or a material medium in the form of electric and magnetic fields. According to quantum theory, electromagnetic radiation is a stream of photons moving at the speed of light through space."

In the Encyclopedia of Modern Ukraine, electromagnetic radiation is defined as "electromagnetic waves emitted by charged particles, atoms, molecules, antennas, and other radiating systems."

Like any other type of radiation, EMF cannot be detected by human senses, but this does not reduce the potential danger to living organisms. Electromagnetic radiation can be considered a