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PULSED ELECTROMAGNETIC FIELDS (PEMF) TO SUSTAIN LIFE IN SPACE COLONIES AND HABITATS

Abstract

Two main components of Earth's pulsed electromagnetic frequencies (PEMFs), the standing waves of electricity or Schumann frequencies, and Geomagnetic frequencies, are essential to human health. NASA and Roscosmos use electromagnetic field generators on the ISS to maintain human circadian rhythms, energy production, and reduce inflammation. (Goodwin, 2003)

As terrestrial life and humans have evolved within the biological magnetic range .2-.7 Gauss in Earth's magnetic field for billions of years, PEMFs have an essential role in human space exploration. The widespread presence of magnetite (Fe3O4) particles in the human brain have been known to exist for decades and are believed to serve some kind of biological purpose (Connie, 2019). A lack of awareness, understanding, research on the biological benefits of schumann and geomagnetic frequencies on Earth and in space imposes challenges to understanding the significance of electromagnetism on human physical and mental health on the inner planets.

This research paper investigates the research conducted since NASA's efforts in the 1950's to better understand the significance that electromagnetic fields have on human and plant health on Earth, in orbit, and space. Researchers from Mars University identify biological human processes dependent on electricity and magnetism, and materials, resources, locations, and optimal frequencies of PEMF generators and other EM products in habitats beyond Earth.

A lightweight, low-powered electromagnetic generator on spacecraft and settlements can mimic Earth's magnetic field to sustain life on missions to other bodies and Star systems. This research is one of the first studies to summarize and expand on the research conducted to date over the past half century on the biology and effects of electromagnetism on human, plant, biology, and astronaut health to sustain human space exploration and settlement.