

## **Expert Opinion:**

Reduction of DC Electromagnetic Field (EMF) damage in work environment, cellular devices / wireless telephone by use of equalization foil **ZONE30** produced by IIREC

Presented by:  
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Mr. Ronny Brecher, Chairman of IIREC, Israel, requested that I present my expert opinion regarding reduction of human health hazards from electromagnetic environment using foils made by IIREC. I hereby declare that I am aware that according to criminal laws regarding perjury under oath in a court of law, this certificate, when signed by me, is as a sworn testimony given in a court of law.

### **Education and Experience:**

I am an expert in radiation damage and serve as a consultant for Electromagnetic Environmental Hazards. I have a PhD in Molecular Biology from the Weizmann Institute of Science (Department of Biophysics, 1976), M.Sc. in Medical Microbiology from Tel-Aviv University (1967, with minor in Pathology Chemistry), and a B.Sc in Agriculture Sciences from the Hebrew University (1962).

In 1966, I joined The Israel Institute for Biological Research – IIBR in Nes-Ziona where I was a staff member for 30 years taking part in projects concerning medical research, Industrial and Medical Biotechnology and Genetic Engineering. I was also a researcher in the Public Health Research Institute of the city of New-York, and an associate professor in Rutgers University in New Brunswick, New Jersey, USA.

I have been a member in several Microbiology, Genetics, Biochemistry and Biotechnology Israeli companies, in the NYAS (New York Academy of Sciences), ASM (American Society for Microbiology), SIM (Society for Industrial Microbiology) and in ASM New-Jersey Branch. In my research, I dealt with laboratory equipment and measuring instruments usually used in biochemistry and biology laboratories,

including computerized sensors, measuring ionizing radiation from radioactive isotopes and operating an electronic microscope.

I took early retirement from the IIBR as a senior researcher (Associate Professor). I then studied EMF damage, chemical hazards and their combinations. I took part in Electromagnetic Environmental Hazards research from its initial stages, and also in researching the damages from environmental chemical pollution and their combination. Current knowledge in this area is described in my book "Your Health in The Computer Age" (1999), published in Japanese (2004), in English on the internet (2005) and soon to be published in French.

Since 2000 I am a consultant and editor of opinions regarding electromagnetic and chemical hazards and their damage using radiation meter with international calibration according to ISO 17025, spectrum analyzer, and a professional scale for electromagnetic fields from electrical types. Received recognition for my expertise from the late Prof. Neal Cherry, world expert on EMF damages, with whom I was invited to Japan (2002) to advise, provide knowledge and measure radiation in a "cancer cluster" residential area near Tokyo and then testifying to a Ministers Committee of the Japanese parliament.

Active member in almost all public and private struggles regarding radiation in Israel, and in the large majority of them also the judicial struggles. I write opinions for low suits in the District and Supreme Court regarding EMF and Chemical environmental hazards. I also act as a professional witness in court.

Researching together, with Prof. Richter Eliyaho from the Jerusalem School of Medicine, cancer clusters in Israel and mapping of magnetic fields and radio radiation. Together with Dr. Barnea Ruth from the University of Haifa, we are researching the influence of cellular radiation on brain waves. I cooperate with other EMF consultants from Israel and other countries. I participate in the Israeli parliament committees as a public representative, provide testimony regarding radiation damages, participate in Knesset phrasing bill and regulations proposal. Together with Ram Dishon Electronic Engineer' provide free counseling on the telephone about radiation from aerials and electrical devices. Have published 56 articles in scientific journals, 55 reports on projects, 2 chapters in science books, published 2 books (one of which was published jointly in Japan), hold 3 patents, written 12 articles in internet sites concerning damages from radio and cellular phones radiation, computer work, and from environmental chemical pollution. My findings on "cancer clusters" in Osiya and protection against radio radiation were widely published in internet sites in Britain, Europe, U.S.A and Canada.

Member of the ICEMS (International Commission for Electromagnetic Safety), and serve as a trustee/science advisor in the British trust fund for research – EM Radiation Research Trust. Member of the managing committee of "Forum for Sane Cellular" of Shatil which is a

coalition of several local committees, Israeli citizens and major environmental organizations. Active in the Green Party, "Adam Teva Vadin", local municipal authorities, committees and associations all over Israel, for preventing radiation from broadcast antennas and different electrical facilities.

Documents that assisted me in writing this opinion:

- 1) Dr. Medinger WH. Lecture handout - Biological Significance of Magnetic Field Gradients. Hotel Daniel, 2005, Hertzelia.  
[www.IIREC.co.il](http://www.IIREC.co.il).
- 2) Articles by Prof. Cherry Nilly concerning damages to the living body caused by various radio radiation (2002-2003).
- 3) Articles by Prof. Gerard Highland concerning damages to the living body caused by cellular radiation (2002-2003).
- 4) Research by Dr. Yossef Friedman et al., from The Weizmann Institute of Science regarding the formation of free radicals when the body is exposed to cellular radiation.
- 5) Report by Ronny Brecher concerning measurement of DC EMF in the work environment with and without the foil (2008).
- 6) Relevant articles presented in bibliography list.
- 7) Engineer Richard Ben-Yshay: Workshop in Geobiology (2007)
- 8) Letters from business customers who already use the equalization foil **ZONE30** in their offices.

### **Obsequium parit amicos, veritas parit odium**

Agreement creates friends; truth creates hatred (Cicero)

## **Introduction**

The evolutionary development of life on Earth was done within its strong DC magnetic field, which is about 500mG (milligauss, equivalent to 50 $\mu$ T microtesla). In addition, there are low AC frequencies acting between the earth and the ionosphere, influenced by the difference in the electrical charge between the earth and clouds and at the same time, from lightning and magnetic storms created by the temperature differences in the sun, visible in the spots of lower temperature and the flows of molten matter within them.

From the sun, cosmic radiation arrives to Earth, probably still from the "Big Bang" (it is possible that additional parts of the radiation are produced within the Earth itself). This radiation arrives in the form of preliminary particles which include the nuclei of most elementary matter, including electrons, positrons, neutrinos and photons of gamma rays. These particles enter the atmosphere in a spiral movement because of the earth's magnetism, collide with the oxygen and the nitrogen nuclei in the atmosphere and create a "rain" of secondary cosmic rays of elementary particles and gamma ray photons. One elementary particle can create a large "rain" of

secondary particles. All these variables cause frequent changes in the earth's magnetic field intensity and in frequencies similar to the natural frequencies in brain waves and others of the body's communication.

Among these low frequencies is the Schumann Eco which actually includes several waves formed because of the cavity between the earth's surface and the ionosphere that direct the waves. The limited dimensions of this system cause it to act as an eco tunnel for EMF rays in very low frequencies (ELF). This tunnel is naturally disturbed by the energy created by lightning strikes. The lowest frequency and highest power of the Schumann eco created are approximately within the 7.83 Hz range. This eco includes the frequencies 7.83, 14.1, 20.3, 26.4, 32.5, 39.0, 45.0 Hz. These are close to natural brain waves and other frequencies that operate the heart and other communications within the body. Schumann's eco, which has existed alongside evolution, whose low frequency of 7.83Hz stands out, provides human beings a feeling of comfort. During the development of space flight, the first astronauts lacked this frequency (because it does not exist above the ionosphere) and this lack damaged their functioning, therefore, in today's spaceships, this frequency is created by a device allowing the astronauts to function as if they were in their natural environment. The sun's radiation reaches the ground only during daylight and therefore there is a difference between the frequencies monitored at day or night and a connection between this radiation and activity of the Pineal gland, the secretion of Melatonin (sleep hormone) and the circadian cycle (of day and night) that are connected to physiological processes and good health.

When factors causing natural radiation on Earth are changed, the magnetic fields change as well, their intensity changes and new peaks appear. The magnetic field's force rises when sunspots appear or during lightning storms causing people to suffer from tiredness and other symptoms such as sleeping disturbances, head aches, depression and reduction in the immune system, these symptoms are usually ascribed to "tiredness caused by work". A good correlation was found between the appearance of sunspots and epidemiology affecting people around the world.

### **Electrical activity in the body and its environment**

Electrical activity within the body is caused by ions (charged atoms) unlike electrical power made by man which caused by electrons. Electronic activity outside the human body influences the body's electrical activity: peaks in the magnetic field influence charged particles within the body. The ions are subject to acceleration or deceleration and to deviation from their course when they pass through the magnetic field's gradient.

According to Maxwell, a magnetic field that changes in space creates an electrical field that changes in time. As a result, the electrical force, time and space change.

The resulting dynamic explains the possible influence on the bio-electrical processes in the body. Ion transition, according to the existing bio-chemical knowledge, is of high importance to physiological processes such as transforming ions in cell membrane ion channels, in blood cells, in nerves cells, sensory perception, muscle cells and others.

Ion transfer in the blood represents a considerable electrical current that challenges the temperature regulation and stabilization systems against the thermal influence of the electrical resistance (Ohm). This paradox, the theoretician physicist Herbert Froehlich, concluded that the body should have superconductivity systems. For now, this phenomenon is expressed only as an example of the importance ions have in physiological process, and to show that a biological system is very sensitive to external factors influencing the ion transfer (Binhi et al 2005), found that a change of 1% in the density of the magnetic flow causes changes to bio-chemical reactions in 10-20%.

The peaks (=gradients) that appear in magnetic fields influence physiological processes, Cavopol et al. (1995) proved that sensor cell's neurons, in culture growth, reacted to peaks in the DC magnetic field, changing the probability to "shoot" their reaction. It was found that peaks in the DC magnetic field can restrain neural impulses, when the retardance in percentages is relative to the field's force: in forces of 1.5 mT/mm the field retards 80%, in forces of 1.0 mT/mm it retards 70%, and 0.02 mT/mm there was no retardance.

Yano et al. (2001) examined the influence of gradients in DC magnetic field according to measurements of distortions in plant roots and found that biological systems detected the gradients and their directions according to the earth's magnetic lines. Gapeyev et al (1996) examined the spectral distribution of DC magnetic field affects in mice on Neutrophils cells (of the immune system)/ radiation of microwave in a remote field showed an increase of the radiation effect, resonance, when a maximum measurement appeared in certain frequencies. In a nearby field, the effect was not connected to the frequency but to the gradient strength alone. The discriminating effects were ruled by the DC field gradient and were found in identical load densities. Of course, strong magnetic gradients disturb biological consistency, especially the transfer of signals within neurons. Weak gradients allow universal orientation in biological systems to the DC magnetic field. The biological importance of DC magnetic fields was discovered in geo-biology experiments: Marsmann and Aschoff found a correlation between geo-pathological zones and gradients in a natural magnetic field. Aschoff et. al. (1985) reported on the frequency of diseases according to gradients found in magnetic fields with a technical base. For example, the removal of a certain bolt from a patient's bed cured Thyroid cancer. This bolt created an incredible peak (gradient) in the bed, in the area of the patient's neck. Removal of the bolt caused the return of the natural field and the body reacted by curing the tumor. Transition areas exist from low to high peaks in areas that fit biological stimuli, more than in areas of strong stable gradients.

Wuest and Wimmer (1934) discovered in a laboratory in Munich University that the arrangement of gradients that created a field with equalized gradients prevented biological reactions of a sensitive person, i.e. a shield against biological stimulus of magnetic fields. A research conducted in IIREC laboratories in Austria showed a correlation between feelings of comfort and physiological parameters in examinees on one hand, and on the other, changes in gradients in the magnetic field.

The company developed a system to measure the consistency pattern of magnetic field (FCP) of spatial mapping with consistent disturbance sources. This is achieved by the correlation between zones with special biological effect or stimulus by changing magnetic gradients and zones of equalized gradients of magnetic fields that provide a shield against biological disturbances. A mathematical evaluation was developed and mapping of the magnetic field gradient's changeability at each measuring point, termed field gradient divergence (FGD). This is an accurate, objective physical system that measures the potential strength of the biological stimuli. Points and areas of stimuli, that includes the biological effects previously mentioned, before they happen, even if we do not see a clear FCP mapping of the measured values.

### **Is it possible to improve the modern working environment for the worker?**

This environment exists in the natural magnetic field but includes EMF devices near the body that cause peaks in the magnetic field which cause different symptoms and reduction of functioning at work. Therefore, we can ask whether it is possible to reduce these magnetic field peaks and is it possible to treat and reduce cellular and wireless phones damage in the user's environment to reduce or prevent their intervention in brain waves.

For this reason I attended an experiment that was designed to examine improvement of the work environment with **ZONE30** foils, conducted in the offices of **IIREC TECNOLOGIES ISRAEL** in Tel-Aviv. The DC magnetic field was measured around a desk containing typical instruments such as a computer, screen, printer etc. in a matrix of spatial points in a well defined grid of 1m x 1m. The DC field strength at each measurement point, in deviation units in  $\mu\text{T}$  (microtesla) from the natural field, was used to prepare a chart of field strength at each point. Measurements were conducted the same way, once with the foil and once without. The results were analyzed in a special computer program, and maps of the work environment peaks were prepared: with and without the foil. These maps show that the foil reduced the divergence in gradients in the DC magnetic field, i.e., the foil flattened the peaks in the field's initial spatial derivative, according to Maxwell's formulas.

Therefore, attaching the equalization foil **ZONE30** should reduce dramatically the negative influence of the peaks created or increased by the EMF devices in the work environment and balance the very low

frequency magnetic field created around cellular/wireless phones, and to provide an effective solution to the problem of radiation from them.

I also examined in my office with two portable spectrum analyzers: Spectran NF-5020 and Welleman PCS 500 if the foil also reduces AC magnetic fields peaks. I examined whether the foil reduces EMF radiation in AC magnetic fields and in radio frequencies in my working environment near a computer, printer and a cellular phone, when all were operating. This measurement was conducted with 3 portable devices: density load meter Chauvin Arnoux CA 43 for radio and cellular radiation, Spectrum analyzer – Spectran AF-6080, and a professional Geosmeter (measures magnetic field power)- AlphaLab UHS that measures the magnetic flow in 3 axis. The results showed that the foil did not change the AC magnetic field peaks and did not reduce the output density of the radio radiation. It is possible to assume that no change was detected because the instruments I used to examine the changes do not read the DC magnetic field, and therefore are different from the **IIREC** device, the Prazisions Teslameter 05/40 that **IIREC** developed, which I saw in the company's office: this is a very sensitive meter that can read the very low frequency gradients in a magnetic field, in  $\mu\text{T}$  units (microtesla) and the measurement method used in **IIREC** laboratories in which it is possible to see the differences between the magnetic field with and without the foil.

#### Conclusion:

Flattening of the DC field peaks by the equalizing foil ZONE030 equalizes also the magnetic field in the very low frequencies around cellular/wireless phones, compensates the electric fields in the work environment and prevents or reduces brain wave frequencies disturbances and others in the body's inter-cellular communication. These activities should create a feeling of comfort and increase a worker's alertness and creativity for the short run, and to prevent the accumulative negative effects of long term exposure. Thank you letters from people who experienced this improvement in their work environment support these assumptions.

With respect,



Zamir P. Shalita

Israel, 26/3/2008

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