



Effects of Excessive Electrical Exposure on Human and Animal Health

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Time for Awareness – Uncontrolled Electricity Affects Human and Animal Health

Chronic exposure to electric and magnetic fields (EMF) may be hazardous to your health. The World Health Organization (WHO) urges all member countries to pass laws that would limit human exposure to EMF. The WHO announcement resulted from hundreds of studies published in credible research journals throughout the world.

The first alarm was sounded in 1979 when investigators found that childhood leukemia was related to proximity of the victim's home to electric power lines in Denver, Colorado. Follow-up studies confirmed that childhood leukemia was 4.3 times higher in homes with higher 180-Hz current and 3rd, 5th, and 7th harmonics in the living areas of the homes. Current (amperes) was followed from the power line down-ground to the water lines and living areas of homes (Kaune et al., 2002).

The final convincer may have been a 2006 study that included 54% of the children 15 yrs and younger in Japan. Investigators found that children who had 0.4 microTesla (μ T) magnetic field in their bedroom were 4.7 times more likely to have ALL (acute lymphoblastic leukemia) compared to children who had 0.1 μ T or less magnetic field in their bedrooms.

Tesla is a measure of current density (amperes/square meter) in a fluctuating magnetic field. Also, 0.1 μ T equals 1 milliGauss (mG).

Electric field density (E) is measured as volts per square meter (V/m^2).

Magnetic fields can be measured as Amperes/square meter and travel through biological tissue essentially the same as radio frequency waves

travel through the air. Then, current density (A/m^2) is a reasonable measure of exposure to electric and magnetic fields, and amperes can be measured radiating from circuits, water pipes, or ECG patches attached to the exposed body.

Electro Hypersensitive (EHS) People

Some people experience immediate reactions when exposed to the electrical radiation from power lines, radios, telephones, and often the EMF radiated from the wiring in walls of the buildings, electrical appliances, and electronic equipment such as Wi-Fi and Wi-Max wireless network, DSL, computers, copy machines, digital clocks, electric blankets and hundreds of other electronic devices.

Common Signs and Symptoms Electrosensitive (ES) People Reported in Extensive Tests:

- Neurological – tingling, sleepiness, headache, dizziness, unconsciousness.
- Musculoskeletal – pain, tightness, spasm, fibrillation.
- Cardiovascular – palpitation, flushing, tachycardia, edema, increased heart rate and blood pressure. Some Students had bleeding noses when exposed to wireless in school.
- Oral/respiratory – pressure in ears, tooth pain, tightness in chest, dyspnea (difficult breathing), some patients had a 20% decrease in pulmonary function when their feet were exposed to certain frequencies of 2.9 uT.
- Gastrointestinal – nausea, belching, stomach cramps, perhaps ulcers.
- Ocular – burning and tearing of the eyes, rate of pupil dilation changes with exposure to different

¹*Shocking News* (dba) is a registered publisher of science-based information dedicated to public awareness of electric and magnetic fields (EMF) in the living environment and their effects on the health and welfare of humans and animals. Editor is Don Hillman, Ph.D., Professor Emeritus, Department of Animal Science, with help from wife Mary, MS, Michigan State University, East Lansing, MI. Don is a member of the American Society of Agricultural Engineers and The American Dairy Science/Animal Science Association. Telephone: (517) 351-9561.

frequencies, cataracts resulting from extensive exposure, and heating.

- Dermal – red rash, itching, burning, prickling pain.

An extensive study of electrosensitive patients revealed that most reactions were neurological. Signs and symptoms of all patients (16/100) were positive as was the autonomic nervous system dysfunction, as measured with the iriscorder an instrument that measures changes in pupil dimensions. Examples of changes were a 20% decrease in pulmonary function and a 40% increase in heart rate (Rea et al., 1991). A 29% increase in heart rate and a 48% increase in diastolic blood pressure were recorded for a resident in an East Lansing, MI, home exposed to EMF radiated from a utility neutral-ground wire below the floor while sitting in the living room sofa.

Rea et al. also found in 1991 that of the 16 patients with positive reactions to EMF challenges, two had delayed reactions, gradually became depressed, and finally became unconscious. Eventually, they awoke without treatment. Symptoms lasted from 5 hours to 3 days.

In 1972, after the Soviets reported that electrical utility workers were suffering from listlessness, fatigue, and nausea, Subrohmangam and coworkers reported decisive changes in cardiac function and bioamine levels when pulses of 0.01 and 0.1 Hz were used. They found significant changes in the hypothalamus in response to the EMF fields.

Such findings concur with the discovery that cardiovascular disease associated with hypertension and ischemia of the heart resulted in odds ratios 4-5 times greater with maximum 19.1 times greater in men 30-39 years of age who were radar trackers in a civil airport compared to co-workers not exposed to EMF in Russia (Tikhonova, 2003).

Power line frequency is 60 Hz as produced by the utility's generator, but it is often contaminated with radio frequency and pulsed signal interference from flaws in the delivery system and by modern electronic equipment added by utility and customer electronic devices along the line.

Human health impairment caused by excessive exposure to electric and magnetic fields (EMF) has been recognized in biomedical and electrical engineering scientific journals. Electricity is invisible,

colorless and odorless. Most people do not feel electric shock when frequencies exceed about 1000 Hertz; thus most people are not aware of the presence of EMF. Hertz (Hz) is the frequency that voltage and current changes positive to negative and reverse, or 1 cycle per second.

Radio frequency (rf) EMF travels inside and outside of wires. As we know, air is a conductor of radio frequency and cellular telephone electrical signals which travel through body tissue just as they do through the walls of buildings to get to your cell phone or radio receiver.

Electricity causes peripheral nerves near the surface of your body to stimulate your brain and activate the autonomic nervous system which controls hormonal secretions from the endocrine glands, i.e., pineal and pituitary glands at the base of the brain. These tiny glands regulate hormonal secretions from the adrenal glands, thyroids, genitals, and other glands that control functions of essentially all organs of the body. These include blood cell maturation, immune system, heart, lungs, gastro-intestinal tract, electrolytes and minerals in blood, water content, and excretion of waste products.

A relationship between childhood leukemia and location of electrical power lines was reported in 1979 in Denver, Colorado, and in Europe. In Japan, children 15 years and under who were exposed to 0.4 microTesla (μT), equal to 4 milliGauss (mG) magnetic fields, in their bedroom had 4.7 times more acute lymphoblastic leukemia (ALL) than matched controls who had less than 0.1 μT EMF in their bedroom. Reports of studies involving EMF and brain tumors, acoustical neuroma, melatonin, Alzheimer disease, breast cancer, and public policy recommendations are in www.bioinitiative.org.

To date, Utilities in Michigan, Wisconsin, and other states have refused to consider EMF when evaluating electrical supplies in homes, farms, and workplaces (MPSC docket U-13934). We must urge the governor and legislature to pass laws that limit exposure to electric and magnetic fields on the basis of non-biased science rather than political and financial vested interested as WHO has urged us.

Become Aware of EMF Exposure in the Living Environment –

Utility’s Primary Neutral-to-Ground wire in the grounded Y-distribution system connected to water pipes in homes, schools, workplaces (including farms) is a primary source of EMF at most locations. EMF exposure at various distances from the ground wire in East Lansing were as in Table 1.

Table 1. EMF (milliGauss) Various Distances from Ground Wire

Distance to Ground Wire Feet Centimeters	milliGauss (mG)	Equivalent (SI) microTesla (μT)
Ground Zero ≤ 1 inch	2.54	97 ± 39.5
1 Ft.	30	16
2 Ft.	60	7.8
3 Ft.	90	5.4
4 Ft.	120	3.6
Living Room Floor	15-25	20 to 50
Don’s Electric Chair	90 to 120	4 to 8
Mary’s Bed Springs	30 to 60	6 to 8
Air Ducts (metal)	30	10 to 16
Iron Bed Rail	30 to 60	8 to 16

*mG @ 1 foot distance was 16.3% of Φ reading, recorded on ground wire by the Utility, Lansing Board of Water and Light Engineers, 01/19/2005.

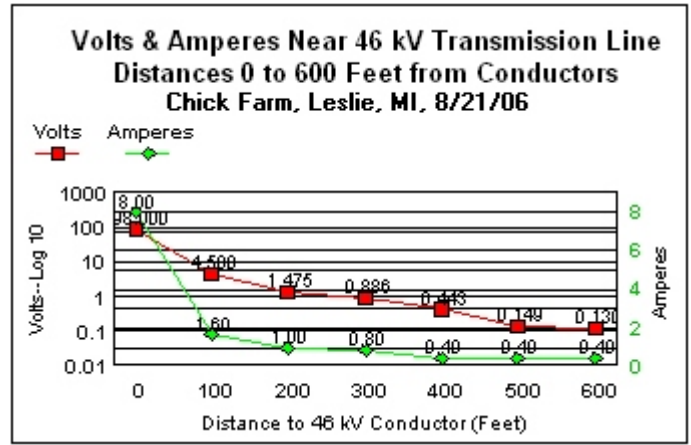
Magnetic Field “Corona” in Relation to the Ground Wire (24-Hr. Average), 750 Berkshire Lane, East Lansing, Michigan

Overhead Power Distribution, Transmission, and Communication Lines are Major Sources of EMF

Power line average residential fields exceed 1 mG in 17% of residences; 2.5 mG in 3.3%, and 5 mG in 0.3 % of residences according to Electric Power Research Institute. What is the EMF exposure at your place? A local 46-kV transmission line radiated current for 600 ft. from the line near Leslie, MI (See following figure).

Reducing EMF Exposure in the Living Environment –

Safe limits for chronic exposure have not been established. However, electrosensitive persons reacted to 2900 nanoTesla at the level of the feet, equal to 2.9 microTesla or 29 milliGauss (mG) magnetic fields over a wide range of frequencies (0.1 Hz to 5 MHz).



Immunoglobulins, interleukins, and cortisol levels were affected in blood of cows exposed to 1 mA, 60 Hz in limited controlled experiments at the University of Wisconsin.

What Can You Do to Reduce EMF Exposure?

Don’t be like the majority of people who ignore the dangers of EMF because they don’t want to give up their cell phone, their microwave, their Ipod, their computer, etc. You don’t have to give up on anything just take steps to identify the problem and correct it.

- **Ask your Utility Company or a knowledgeable Electrician/Engineer for a power-quality evaluation and a 24-Hr EMF recording.** Be sure they bring a meter that will measure more than 60 Hz. Perhaps they will fix the problem.
- **Notify the Governor and Legislature** of the problem and ask them to protect their citizens.
- **Install a dielectric union** (an insulated coupling) in the water pipe below the PN-G connection. This may stop the EMF from radiating into your living environment because the electricity is most probably grounded to the water line.
- **Insert G-S Filters** to be plugged into 120-Volt wall outlets to remove most of the high frequency EMF from that source. **EMF Graham-Stetzer Microsurge meters and G-S Filters** are UL approved and may be ordered with instructions for installation via E-mail: Dave@stetzerelectric.com or www.stetzerelectric.com. These filters can also be plugged into wall outlets where electronic

equipment is used as in offices, schools, and entertainment rooms.

- **Check other manufacturers of mitigation devices** listed on the Internet or in local advertising. The range of frequencies filtered and UL approval must be considered; otherwise your fire insurance may be invalidated regardless of the cause of a fire.
- **Ask Telephone and Cable companies to install a shielded neutral isolation transformer to eliminate the problem** because telephone communication cables and digital cordless telephones emit large amounts of EMF and your telephone or radio station may be connected to the same neutral-ground wire.
- **Sit, work, or sleep at least 4 feet from appliances** such as televisions, digital clocks, variable light switches, new halogen (fluorescent) lights, etc. If you use an electric blanket to warm your bed, turn it off while sleeping under it. Most electronic equipment and appliances in the home or office emit considerable EMF.
- **Use a Gauss meter** to determine where it is safe. Alpha Lab offers TriField meters at (801) 487-9492. Also, try your local electronics store.
- **Shielding your house with fine wire mesh** may be the best protection from wireless (airborne) EMF from all sources.
- **Seek Medical Assistance**, if all of the above fail to give sufficient relief from “**rf sickness.**”

Electropathic stress and effects of electricity on the health and behavior of humans and animals has not been a subject in medical education. We scoured Michigan for a doctor that was familiar with EMF diagnosis and treatment but were unsuccessful.

We found that Dr. William Rea, MD, Environmental Health Center, Dallas, Texas, has conducted research, determined sensitivity, and prescribed successful treatment to hundreds of electrosensitive patients. He is a surgeon who became sensitive to electricity and has created a safe environment to check for environmental diseases. His offices can be contacted at EHC-Dallas; telephone (214) 368-4132.

You can:

- Encourage your doctor to become familiar with signs of EMF exposure, methods of diagnosis, and treatments that have been successful.
- Urge doctors who are familiar with the electropathic stress syndrome and treatment to contact us so we can assist those needing medical help, and/or
- Make an appointment with Dr. William Rae.

Differences in genetic make-up of individuals plus intensity and duration of exposure and frequency of the electromagnetic currents will cause different reactions in different people. Perhaps only high levels of exposure will affect some people, while others suffer seriously from very low levels. Persons with allergies to other chemical toxins are commonly sensitive to EMF.

If you are interested in supporting an EMF Conference for Practitioners, please contact us.

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Educational DVD Available:

Electro-Magnetic Fields – EMF in Homes, Schools, and Workplaces – Dangers of Dirty Electricity on Humans and Animals. Donald Hillman, Ph.D., Presentation at the 25th Annual Symposium – Environmental Effects on Health. The Autonomic Nervous System. July 7-10, 2007. Email: donag1@aol.com. Phone: (517) 351-9561. Address: 750 Berkshire Lane, East Lansing, MI 48823.