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ELECTROMAGNETIC RADIATION HAZARDS

ACKNOWLEDGEMENTS

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While the positive aspect of technologic innovation makes the life easier with electronic devices and the development in communications, it may also involve components that impair the quality of life via its certain negative effects.

We are under continual attack from electromagnetic fields (EMFs) radiating from power lines, household wiring, microwave ovens, computers, televisions, clock radios, cellular phones, electric blankets, and other appliances. Researchers have correlated electro-pollution with increases in cancer, birth defects, depression, learning disabilities, chronic fatigue syndrome, Alzheimer's disease, and sudden infant death syndrome. The danger is real and with increasing use of electricity in our environment it is one of the reasons why many scientists believe some disease rates are on the rise.

Interaction between electricity and magnetic fields produces electro-magnetic radiation. Electromagnetic radiation (EMR) or electromagnetic fields (EMFs) are the terms that broadly describe exposures created by the vast array of wired and wireless technologies that have altered the landscape of our lives in countless beneficial ways. Though these technologies were designed to maximize energy efficiency and convenience; there is growing evidence among scientists and the public about possible health risks associated with these technologies based on new studies. This is also called EMR hazards or RADHAZ.
http://www.bioinitiative.org/

EMF radiation passes through space at the speed of light at about 300 million meters per second and it interacts to the planned operations or occupancy. We cannot see it, taste it or smell it, but it is one of the most pervasive environmental exposures in industrialized countries today. Human beings are bioelectrical systems. Our hearts and brains are regulated by internal bioelectrical signals. Environmental exposures to artificial EMFs can interact with fundamental biological processes in the human body. In some cases, this can cause discomfort and disease.

EMFs are not blocked or weakened by the trees, walls, buildings, or other structures. Like X-rays, they pass through these objects and into our bodies—disrupting normal cellular function and biological processes.

SOURCES OF EXPOSURE

ENVIRONMENTAL AND NATURAL

Our greatest exposure to EMFs comes from within our homes and offices. All household and office appliances emit EMFs. But we cannot tell which are most dangerous by their size or function. Often the small devices like electric can openers and hair dryers are much more dangerous than the larger ones such as electric ovens or refrigerators.

http://www.amazon.com/Health-Hazards-Electromagnetic-Radiation-Electropollution-ebook/dp/B00ESNME4U

http://www.arpansa.gov.au/radiationprotection/solaria/Offline/02/02.html

A team of scientists, medical doctors and engineers from around the world in ICEMS (International Commission for Electromagnetic Safety) state the existence of non-thermal effects of EMFs on living matter, which seem to occur at every level of investigation from molecular to epidemiological. They also encouraged an ethical approach in setting of exposure standards, which protect the health of all.

http://wifiinschools.org.uk/4.html

Exposure to electromagnetic fields is not a new phenomenon. However, during the 20th century, environmental exposure to man-made electromagnetic fields has been steadily increasing as growing electricity demand, ever-advancing technologies and changes in social behaviour have created more and more artificial sources. Everyone is exposed to a complex mix of weak electric and magnetic fields, both at home and at work, from the generation and transmission of electricity, domestic appliances and industrial equipment, to telecommunications and broadcasting.

We are fundamentally electro-magnetic beings with micro electrical currents being generated to control our bodily functions such as growth, metabolism, thought, movements, etc. Disturbances to this electrical network in our body can cause malfunctioning of our internal organs, especially to the brain. Exposure to consistent external frequency for more than a few minutes can cause our body's electrical functionality to be disrupted. This is true even with exposures to very weak EMFs.

OCCUPATIONAL

At work, there are similar dangers: radiation sources and radiation enhancers. Certain occupations present more of a risk than others. The workers listed below have the greatest radiation exposure daily:

Occupations	Typical Exposure (in milligauss)
Cable Splicers	to 15 mG
Distribution Substation Operators	to 34 mG
Electronics	to 34 mG
Line Workers	to 35 mG
Machinists	to 28 mG
TV Repair Workers	to 08 mG
Welders	to 96 mG

http://www.globalhealingcenter.com/health-hazards-to-know-about/electromagnetic-radiation

Office workers are not safe either. They have to contend with fluorescent lighting, computers and other electronic devices that people rarely, if ever, hesitate to use.

CLASSIFICATION OF EMFs

According to their frequency and energy, electro-magnetic waves can be classified as either ionizing radiations or non-ionizing radiations (NIR).

Ionizing radiations are extremely high frequency electromagnetic waves (X-rays and gamma rays), which have enough photon energy to produce ionization by breaking the atomic bonds that hold molecules in cells together.

Non-ionizing (NIR) is a term for that part of the electromagnetic spectrum which has photon energies too weak to break atomic bonds. They include ultraviolet radiation, infrared radiation, radiofrequency and microwave fields. NIR can not cause ionization however they have been shown to produce other

biological effects, for instance by heating, altering chemical reactions or inducing electrical currents in tissues and cells.

There are four subgroups of electromagnetic radiation fields with frequency and intensity. This electro-magnetic spectrum begins at a frequency of 1 Hertz (Hz), which is 1 wave/sec.

SUBGROUPS OF ELECTROMAGNETIC RADIATION

Type	Frequency range	Source
Static	0Hz	• Natural • Video • MRI • Industrial electrolysis
Extremely low frequency (ELF)	(0<f≤300 Hz)	• Power-lines • Domestic distributions • Electric engines in cars, train, tramway
Intermediate frequency (IF)	(300Hz<f≤ 100kHz)	• Monitors • Anti-theft devices • Hands free access control systems • Card readers • Metal detectors
Radio frequency (RF)	(100kHz<f≤ 300GHz)	• Broadcasting and TV • Mobile telephony • Microwave oven • Radar • Portable and stationary radio transceivers • Personal mobile / radio

http://www.intechopen.com/download/get/type/pdfs/id/16094

HAZARDS OF EMFs

RADIATION DAMAGE

An electromagnetic radiation hazard exists when electronic equipment generates a strong enough electromagnetic field to fall in a category listed below:

- Causes harmful or injurious effects to humans and wildlife
- Induces or otherwise couples currents and/or voltages of magnitudes large enough to initiate electro-explosive devices or other sensitive explosive components of weapons systems, ordnance, or other explosive devices
- Creates sparks large enough to ignite flammable mixtures or materials that must be handled in the affected areas.

http://www.tpub.com/neets/book17/75k.htm

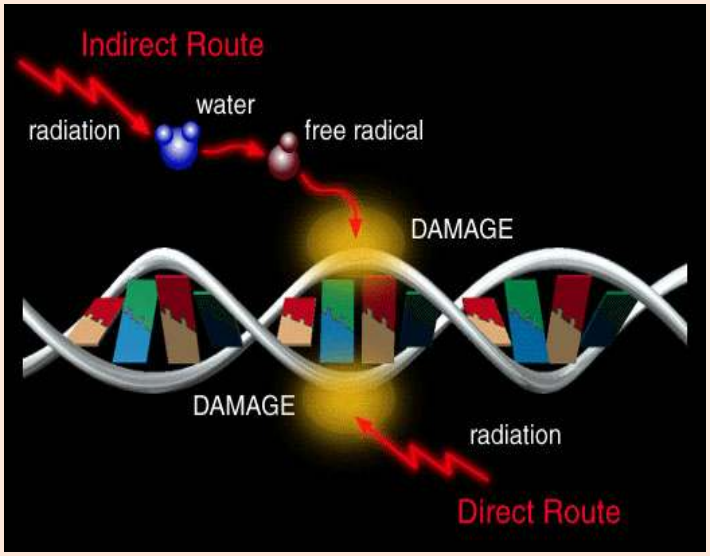
It is not disputed that electromagnetic fields above certain levels can trigger biological effects. Experiments with healthy volunteers indicate that short-term exposure at the levels present in the environment or in the home do not cause any apparent detrimental effects.
http://www.who.int/peh-emf/about/WhatisEMF/en/ index1.html

The EMF are not in themselves dangerous, they are not devastating our body cells like X-Rays, but our immune system is recognizing them as an enemy like a virus or bacteria. Fighting with them surrounding us everywhere makes our immune system overtired. Overtired immune systems are not able to handle all tasks and are unable to completely defend our bodies - e.g. catching cancer cells.
http://biznetmall.com/neutralizers/emf-hazard.html

CELLULAR EFFECTS

Even though RF/microwaves don't have the energy to directly break chemical bonds, unlike ionizing radiation such as X-rays, there is scientific evidence that this energy can cause DNA damage indirectly leading to cancer by a combination of biological effects.
http://www.globalresearch.ca/smart-meter-dangers-the-health-hazards-of-wireless-electromagnetic-radiation-exposure/31891

Radiation can damage the DNA in the cells of living things. Damaged DNA can make the cell stop working or unable to reproduce. It can also cause the cell to grow out of control, causing cancer.



http://www.windows2universe.org/earth/Life/radiation_danger.html

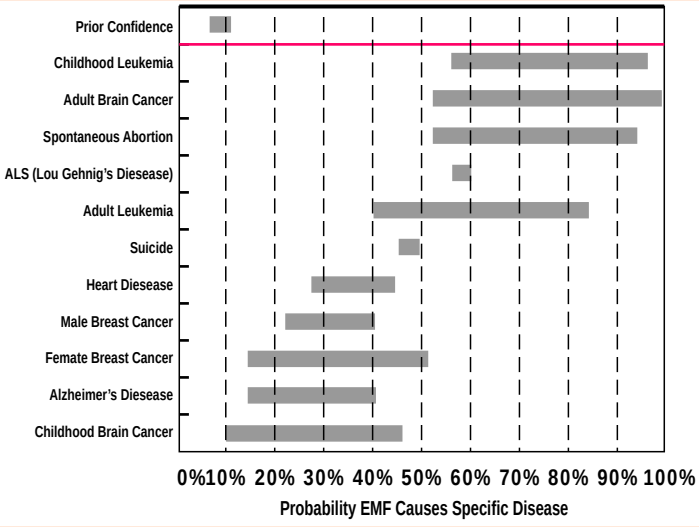
HEALTH EFFECTS

Human bodies are very sensitive to EMFs. When we interact with natural energies, we reinforce the natural balance within our energy system. But when we are exposed to man-made EMFs that are unnatural for our bodies, they create a chaotic situation that is harmful. Our bodies absorb and store the energy fields that weaken our immune system, resulting to various illnesses and diseases. Some diseases linked to constant exposure to EMFs: Headaches, disturbance in sleep patterns, shortened attention span, increased blood pressure, damage to eyes especially when glaucoma medication are also taken, chronic fatigue syndrome, memory loss, miscarriages, birth defects, leukemia, lymphoma, brain tumor and even cancer.
http://juicing-for-health.com/basic-nutrition/types-of-toxins/dangers-of-electromagnetic-radiation.html

- Studies have shown EMF exposure above 2 mG will start to develop biological stress.
- Evidence links prolonged exposure to levels between 2 and 12 mG+ with cancer and possible immune system effects.
- Exposure to 12 mG suppresses the human hormone melatonin (critical for sleep, mood regulation, and overall health)

http://www.safespaceprotection.com/electrostress-from-home-appliances.aspx

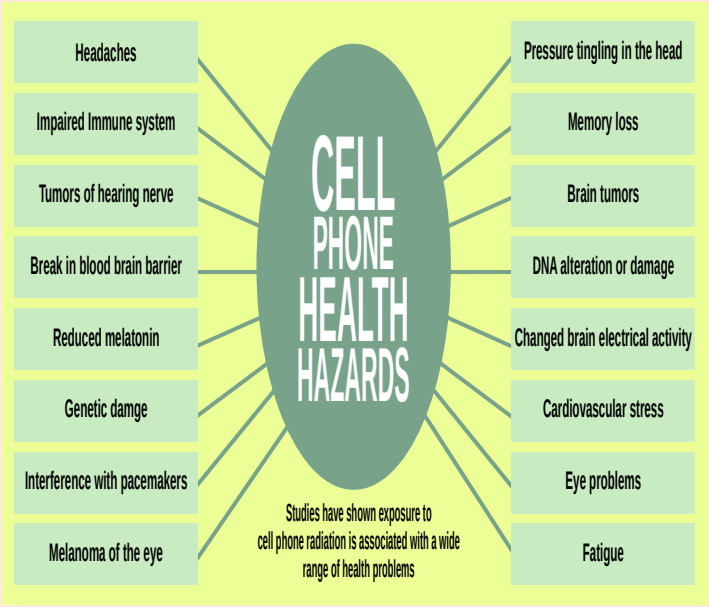
The following graph shows the range of the estimates of probabilities that EMF causes specific diseases. “Prior confidence” is the researchers' estimate of the overall disease probability assigned before learning about the recent research results.



http://biznetmall.com/neutralizers/emf-hazard.html

Entrainment is the tendency of an object to vibrate at the same frequency as something outside of it. In other words, powerful artificial EMFs overwhelm your body's own electrical fields, changing their frequency and distorting the balance of the body's electromagnetic field and its communication systems. This causes physical, mental and emotional chaos.

The danger doesn't always pass once you get away from the strong electromagnetic field. That's because biological systems have been proven to store electromagnetic radiation within the cells in the form of electromagnetic oscillations. These oscillations can stubbornly remain inside you, wreaking havoc with your body's most important processes.
http://www.safespaceprotection.com/harmful-effects-electromagnetic-fields.aspx



http://www.safespaceprotection.com/electrostress-from-cellphones.aspx

EFFECTS ON BLOOD BRAIN BARRIER

Environmental heat in excess of the mammalian thermoregulatory capacity can increase the permeability of the BBB to macromolecules. Neuronal albumin uptake in various brain regions was shown to be dose dependently related to brain temperature, with effects becoming apparent with temperature increases of 1°C or more. Thus, albumin bounded drugs uptake increases.
http://www.intechopen.com/download/get/type/pdfs/id/16094

ELECTROMAGNETIC HYPERSENSITIVITY

Despite regulatory protection against thermal effects, a small, but significant, percentage of people have

reported health problems that are believed to be caused by exposure to electromagnetic fields (EMF), for example from cell phone towers, WiFi and cordless phones. Authorities have labeled this group of people as having "electromagnetic hypersensitivity" or EHS. Common symptoms reported by people with EHS include heart palpitations, dizziness, nausea, digestive disturbances, fatigue, tiredness, difficulty concentrating, and skin irritation.
http://www.heartmdinstitute.com/health-topics/emf-sensitivity/the-fine-print/182-cell-phone-hazards-part-ii?showall=&start=1

PREVENTION OF EMFs HAZARDS

MEASUREMENT

1 mG (milligauss) is the common unit of measurement for magnetic fields. One milliGauss is 1/1000 of a Gauss. These fields are measured using an instrument called a milligauss meter or Electrosmog Detector.

SAFETY LIMITS

Today's public exposure limits for telecommunications are based on the presumption that heating of tissue (for RF) or induced electric currents in the body (for ELF) are the only concerns when living organisms are exposed to RF. These exposures can create tissue heating that is well known to be harmful in even very short-term doses.

In the last few decades, it has been established beyond any reasonable doubt that bio-effects and some adverse health effects occur at far lower levels of RF and ELF exposure where no heating (or induced currents) occurs at all; some effects are shown to occur at several hundred thousand times below the existing public safety limits where heating is an impossibility.

For safety, the EPA recommends to limit magnetic field exposure to 0.5-2.5mG.

LIMITING EMF EXPOSURES

- Keep your distance! EMFs are strongest at 2-3 feet or closer. Standing back from an appliance when it is in use as magnetic fields from appliances drop off dramatically in strength with increasing distance from the source. Don't sit close to the back or sides of the monitor even when it is in another room or behind a partition.
- Avoid unnecessary proximity to high EMF sources such as appliances including electric blankets and hair blow dryers.
- Remove all electrical appliances at least 6 feet away from bed.
- Do not put cell phone under pillow as an alarm clock. It emits EMF even when not in use.
- Reduce time spent in the field. Use electrical items for only brief periods. Switch off the power when not in use.
- Correcting the household-wiring problem. Check the background field in home.
- Purchase new appliances. The older the appliances, the greater the risk, as more EMFs are emitted.
- Limit the time spent around home's electrical appliances.
- Place all clocks, cell phones, cordless phones and other electrical devices at least 6 feet from the place of sleep.
- If one wears glasses, go for plastic frames or non-metal frames. Good conductor material can serve as an antenna to channel radiowaves directly into brain.
- Grow some plants indoors. Plants are natural eco-friendly air purifiers and their leaves can help absorb some infrared radiation and produce negative ions that are necessary for bodies.
- Avoid prolonged exposure of children to television and computers.

http://juicing-for-health.com/basic-nutrition/types-of-toxins/dangers-of-electromagnetic-radiation.html

RADIATION BARRIERS

In spite of the absence of valid evidence based on solid scientific research, the effects of EMFs on the health of individuals and environments may still be of concern to some people. Until research data suggests a need for more extreme action, those who want to do something may wish to consider the following suggestions:

- Use for all members of family the Peace Ball, a personal device. Be sure, to wear it 24 hours every day.
- Install a Neutralizer in house, car and in workplace

http://biznetmall.com/neutralizers/emf-hazard.html

EXISTING LEGISLATIONS

WHO's International EMF Project was launched to

provide scientifically sound and objective answers to public concerns about possible hazards of low level electromagnetic fields.
http://www.who.int/peh-emf/about/WhatisEMF/en/ index1.html

The ICNIRP is the International Commission for Non-Ionising Radiation Protection. Since 2000, the UK has followed the recommended exposure limits of the ICNIRP for mobile telecommunications (ICNIRP, 1998).

- The World Health Organisation (WHO, 2008) also states *'The main conclusion from the WHO reviews is that EMF (electromagnetic field) exposures below the limits recommended in the ICNIRP international guidelines do not appear to have any known consequences on health.'*
- The International Bio-Initiative report (2007) states *'..... what is clear is that the existing public safety standards limiting these radiation levels in nearly every country of the world look to be thousands of times too lenient. Changes are needed.*'

http://www.globalhealingcenter.com/health-hazards-to-know-about/electromagnetic-radiation

Knowing that there is danger inherent in owning and operating cellular devices has not curbed the manufacture or selling strategies of cellular providers. This knowledge has not encouraged the government to stop cellular providers from raising the acceptable emissions allowances. This information hasn't even inspired a cellular provider to voluntarily include a frequency-absorbing chip to protect their customers.

Cellular towers continue to be erected on office buildings' sides, and tops. Only monetary consideration between the buildings' owners and the cellular providers determines the feasibility. The towers harm people by emitting very high levels of the RF radiation sometimes exceeding the guidelines. The harm is done to anyone in close proximity to the tower, certainly to the workers in the facility.

RADIO-FREQUENCY RADIATION HAZARD WARNING SYMBOL

The warning symbol for radio frequency radiation hazards shall consist of a red isosceles triangle above an inverted black isosceles triangle, separated and outlined by an aluminum color border. The words “Warning—Radio-Frequency Radiation Hazard” shall appear in the upper triangle.

http://www.mysafetysign.com/Safety-Signs/Radio-Frequency-Radiation-Sign/SAF-SKU-S-2967.aspx

EVENTS

A one day educational visit to NIOH and ENVIS NIOH for the nurse of JG College of Nursing, Ahmedabad and doctors of Ahmedabad Homeopathic Medical College, Ahmedabad was arranged on 29th November and 11 December 2013 respectively.

INTERESTING FACTS

- Low dose exposure doesn't mean low risk. In fact, low-level EMF exposures increases health risks!! http://juicing-for-health.com/basic-nutrition/types-of-toxins/dangers-of-electromagnetic-radiation.html
- Everything generates an EMF. The natural earth creates one, and so does the human body. Human body creates an EMF of about 10 Hz. http://www.safespaceprotection.com/electrostress-from-home-appliances.aspx
- Despite extensive research, to date there is no evidence to conclude that exposure to low level EMFs is harmful to human health. http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html
- Scientists say that chances of developing Alzheimer's, Multiple sclerosis and Parkinson's is enhanced by two minutes of exposure to emissions from mobile phones which can disable a safety barrier in blood causing proteins and toxins to leak into the brain. http://www.wittysparks.com/dial-c-for-cancer-health-hazards-of-mobile-phones-exposed/
- The eyes and testes are the most vulnerable body organs to EMR. http://www.phoneradiationchips.com.au/about-phone-radiation/

WEBLINKS

- http://www.justproveit.net/studies
- http://www.bioinitiative.org/
- http://wifiinschools.org.uk/22.html
- http://www.explorecuriocity.org/Content.aspx?ContentID=2205
- http://www.safeheadset.com.au/page/radiation
- http://stopsmartmeters.org.uk/resources/resources-scientific-studies-into-the-health-effects-of-emr/
- http://www.treehuggersofamerica.org/cellphones_health_hazards.php
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- http://www.zcg.com.au/rf_hazard_warning_signs.htm

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