

No, Your Patient Is Not Crazy

Radiofrequency Sickness: Symptoms, Causes, Mechanisms, Diagnosis, and Treatment

Catherine Kleiber, webmaster at www.electricalpollution.com

Radiofrequency Sickness

Radiofrequency sickness results from overexposure to radiofrequency radiation. Radiofrequency sickness is not a disease. It is an environmentally induced functional impairment. Radiofrequency sickness has real and disabling consequences. People with radiofrequency sickness experience illness (or even death) upon exposure to radiofrequency radiation.^{1,2,3,4} The most common sources are electrical pollution – high frequencies that travel on building wiring or through the ground– and transmitters – all wireless devices. Radiofrequency sickness develops when the exposure overwhelms the body’s ability to compensate for the effects produced by the exposure, often within 3-5 years.

Detrimental biological effects, distinct from tissue heating effects, have been extensively documented in studies at a range of different frequencies and at levels far below the current United States safety standard.⁵

Our current safety regulations are not designed to protect people from the non-thermal hazards posed by wireless devices and transmitting meters. The FCC “safety” guidelines are solely designed to protect a 6 ft 185 lb man from tissue heating during a short (6 minute) exposure. They are not designed to protect even a 6 ft man - never mind smaller men, women, pregnant women, children, and fetuses - from biological effects during a continuous exposure.^{6,7} Population exposures from transmitting utility meters and other transmitters (wireless devices) are continuous, so these “safety” standards are meaningless. Transmitting devices compliant with current safety standards should not be characterized as “safe”. The fact that these transmitters are deemed “safe” because they comply with FCC guidelines is part of the reason that exposure is now ubiquitous and involuntary. Recent studies and an extensive historical literature strongly support complying with the precautionary principle.⁸ Enacting precautionary policy would require establishment of lower safety standards for chronic exposures to radio frequency radiation for the population as a whole.

Symptomatology

Microwave and radiofrequency radiation are now being associated with attention deficit disorder, autism, sleep disorders, multiple sclerosis, fibromyalgia, chronic fatigue syndrome, Alzheimer’s disease, SIDS, epilepsy and chronic pain, as well as asthma, diabetes, malignant melanoma, breast cancer, and other illnesses that have become increasingly more common. Please see www.bioinitiative.org* to read a 2007 review of the peer-reviewed science on the long-term risks of exposure to transmitted microwave and radio frequency radiation. Studies finding no health effects are predominantly industry funded.⁹ A report by Hallberg and Johansson¹⁰ published recently in *Pathophysiology* asks the provocative question about whether the recent (1997 and later) increase in exposure to microwave frequencies may be responsible for the recent decline in public health in Sweden. The data seem to say that public exposure to microwave frequencies is a likely culprit.

Autism continues to be a puzzle. Robert Kane, PhD suggested a link between exposure to radio frequencies and the rise in autism.¹¹ There are reasons to believe that Dr. Kane may be correct. The fact

* Sections of *The BioInitiative Report* was updated in 2009 and published in a special issue of the peer-reviewed journal *Pathophysiology* available at: http://www.sciencedirect.com/science?_ob=PublicationURL&_tockey=%23TOC%235138%232009%23999839997%231345066%23FLA%23&_cdi=5138&_pubType=J&_auth=y&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=46db922ea4d2a2352e7490de7de6c785

that, despite the removal of mercury from vaccines, the rate of autism is continuing to increase and has increased more or less in parallel to the increasing rate of exposure to high frequencies and emf is suggestive, as is the fact that the Amish Community had not experienced a similar increase in the rate of autism. Some attribute this to the fact that the Amish don't vaccinate. However, the Amish also have not had the radiofrequency and emf exposures now standard in modern society. A large Danish (13,159 child) study links links high frequency exposure pre- and post-natally with behavior and learning difficulties.¹²

Causes of Radiofrequency Sickness

Electrical pollution and wireless technology expose people to radiofrequencies. Often the levels of exposure are high enough to cause chronic or severe illness. Exposure is often involuntary. For instance, exposure to radiofrequency radiation from neighbors often causes sensitive people in town to be chronically ill, unable to recover.

Utility companies nationwide are moving toward installing transmitting electrical, gas, and water meters at each customer's service. The new digital meters installed on electrical services are called "smart" meters because they can do time of day metering, keep very close track of energy usage, and potentially perform other functions. Many of these "smart" meters are **transmitting** "smart" meters. The transmitting meters often send in the data by transmitting in strong microwave bursts every few seconds 24 hours per day 7 days a week.

In addition to transmitting in strong bursts, transmitting, "smart," or AMR meters can also overexpose the general population to high frequencies by putting high frequencies on home and building wiring, either deliberately through signaling or inadvertently through poor engineering. High frequency signals on power lines are also biologically active. Milham and Morgan found a dose-response relationship between high frequencies present on building wiring and cancer¹³. Recent analysis of historical epidemiological data indicates a relationship to cancer, diabetes, heart disease, and suicide¹⁴. Removing high frequencies on building wiring has improved MS symptoms, blood sugar levels, asthma, sleep quality, teacher health, student attentiveness, headaches, ADD, and numerous other health problems^{15,16,17}. Technical papers provide a solid electrical and biomolecular basis for these effects. A recent paper by Ozen showed that transients induce much stronger current density levels in the human body than does the powerline 60Hz signal¹⁸. A technical paper by Vignati and Giuliani discusses the authors' findings that high frequency communication signals on power lines also induce much stronger electrical currents in the human body than a low frequency signal of the same strength¹⁹. The induced currents disturb normal intercellular communications. This causes harmful short-term and long-term effects. Additional information can be found on www.electricalpollution.com. Information necessary to properly measure the high frequencies causing

Symptoms of Radio Wave Sickness (excerpted from *No Place To Hide* April 2001):

- **Neurological:** headaches, dizziness, nausea, difficulty concentrating, memory loss, irritability, depression, anxiety, insomnia, fatigue, weakness, tremors, muscle spasms, numbness, tingling, altered reflexes, muscle and joint pain, leg/foot pain, "Flu-like" symptoms, fever. More severe reactions can include seizures, paralysis, psychosis and stroke.
- **Cardiac:** palpitations, arrhythmias, pain or pressure in the chest, low or high blood pressure, slow or fast heart rate, shortness of breath.
- **Respiratory:** sinusitis, bronchitis, pneumonia, asthma.
- **Dermatological:** skin rash, itching, burning, facial flushing.
- **Ophthalmologic:** pain or burning in the eyes, pressure in/behind the eyes, deteriorating vision, floaters, cataracts.
- **Others:** digestive problems; abdominal pain; enlarged thyroid, testicular/ovarian pain; dryness of lips, tongue, mouth, eyes; great thirst; dehydration; nosebleeds; internal bleeding; altered sugar metabolism; immune abnormalities; redistribution of metals within the body; hair loss; pain in the teeth; deteriorating fillings; impaired sense of smell; ringing in the ears.

these health problems can be found on the Technical page. A simple meter is also available that can provide accurate measurements of electrical pollution levels in most situations.

Mechanisms of action - A brief overview

A number of studies show that electromagnetic radiation, including radiofrequency radiation, alters heart rate variability, blood pressure (including inducing hypertension with microwave exposure – most wireless devices transmit in the microwave range) and increases risk of arrhythmia-related heart disease and heart attack.^{4,5}

There is extensive documentation in the literature of alterations of Ca²⁺ homeostasis.⁵ This is likely to be responsible at least in part for the profound effects that radiofrequency radiation has on the heart and neurological function. Ca²⁺ regulates gap junction opening. Gap junctions are key in many intercellular communications.

Exposure to radiofrequency radiation also interferes with the action of enzymes, signaling pathways, and makes the immune system simultaneously hyperactive and less effective.^{5,20} Immune impairment results in part from the disruptive effect of radiofrequency radiation on calcium ion homeostasis. In addition to radiofrequency radiation-induced immune impairment increasing risk of various types of infection, it is likely to increase the risk of getting cancer from the DNA breakages that radiofrequency radiation is well-documented to induce.⁵ While radiofrequency radiation is non-ionizing, the metabolic changes it can cause result in oxidative damage to DNA and subsequent breakage. Direct interactions between radiofrequency radiation and DNA can have similar results, as well as causing changes in gene transcription, through changes in electron flows induced by the radiation.²¹

Neurological function can be seriously impaired by radiofrequency radiation. Ca²⁺ homeostasis and gap junction function are key to neurological function. Cholinesterase enzyme activity is impaired by exposure to radiofrequency radiation in a manner similar to impairment caused by organophosphate pesticides, often rendering a person with radiofrequency sickness particularly sensitive to small amounts of chemicals.²² Radiofrequency radiation can lower the pain threshold, slow reaction times, cause fatigue, muscle weakness, headaches, difficulty concentrating, short-term memory problems and even memory loss.^{1,2,3,4}

Radiofrequency radiation significantly decreases melatonin levels and decreases the ability of existing melatonin to fight cancer.⁵ Good sleep is essential for good mental and physical health. Good sleep is very difficult, if not impossible to obtain with abnormally low melatonin levels. Sleep deprivation along with impaired neurological function, altered brain glucose metabolism, disruption of various enzyme pathways, induction of the stress response and associated effects, and increased permeability of the blood-brain barrier (lasting as long as 50 days after exposure), are likely to be behind the brain fog and cognitive difficulties those with radiofrequency sickness experience.^{4,5,22,23,24,25,26}

In the book "The Brain that Changes Itself" the author, Norman Doidge M.D., discusses the research into brain plasticity by Michael Merzenich, PhD. Dr. Merzenich has found that many of the symptoms of autism can be explained by the developing brain getting locked into an undifferentiated brain map prematurely. The book cites a study that found that continuous exposure to white noise could contribute to this happening in susceptible children. The mechanism is unlikely to be specific to white noise and likely to be responsive to any exposure to large amounts of high frequencies (such as electrical pollution and transmitters - wireless devices). Dr. Merzenich has developed a treatment that is based on the premise of high frequency exposure. He has found it to be far more effective than originally hoped. The effectiveness would validate the link Dr. Kane suggested between autism and radiofrequency exposure

since it targets developmental damage caused by the effects of high frequency exposure in susceptible individuals. The treatment Dr. Merzenich has developed is a special computer program - Fast Forward. It simply aims at re-opening developmental windows and properly differentiating the portions of the brain involved.

Radiofrequency exposure may cause or contribute to SIDS as well. Dr. William Sterner, chief medical examiner for the State of Rhode Island, found that babies that died of SIDS had lower melatonin levels than babies that died of other causes. He postulated that this caused depressed respiration²⁷.

Radiofrequency radiation exposures have been well documented to decrease melatonin levels.^{4,5} They are also well documented to interfere with neurological function.^{4,23} There has not been a consistent rigorous evaluation of this possibility in SIDS investigations. A thorough evaluation should include transmitted high frequency readings, electrical pollution readings, and gauss readings, perhaps even on a 24 hour basis for a period of time, as well as a check for proximity to various sources such as baby monitors, wireless internet modems, transformers for electronics, DECT phones, TVs, computers, including on the other side of the nursery wall.

Diagnosis

Diagnosis of radio frequency sickness remains a largely clinical diagnosis. Since it is an environmentally-induced functional impairment, the health of the whole family should be considered when considering radiofrequency sickness as a diagnosis. Some previous diagnoses seem to strongly indicate radiofrequency exposure as a causal agent or an aggravator, even without consideration of other family members. These diagnoses are: multiple sclerosis, fibromyalgia, and chronic fatigue syndrome. Other diagnoses such as asthma, diabetes, headaches, migraines, allergies, rashes, sleeplessness, ADD/ADHD, GERD, autism, depression, nausea, and possibly chronic lyme disease warrant checking for association with radiofrequency sickness, especially when more than one family member has any of the diagnoses mentioned or has noticed changes in symptoms at different locations. For instance, the patient always gets headaches at work, but not at home - or vice versa. Day of the week associations or time of year associations may also indicate an association with radiofrequency sickness.

Bradycardia, tachycardia, sinus arrhythmia, and many other symptoms may relate to the neurologically exhausting effect of radiofrequency exposure. Changes in EKG and EEG were also noted. Radiofrequency sickness can also cause changes in the pain threshold and so should be considered in patients with chronic pain of unknown etiology.^{4,23}

Treatment

The only "cure" for radiofrequency sickness is to end the exposure to radiofrequency radiation.

Eliminating exposure to radiofrequencies in this day and age can be a challenge. Patients will need to begin in their own environments where they have the most control. A comprehensive list of steps to take to eliminate exposure to radiofrequencies as much as possible is available at www.electricalpollution.com/solutions.html.

Many people can reduce their exposure enough in their own environments to enable them to improve. Others find that they have to move. Many will need your help to facilitate the changes necessary. As their physician, you may need to write letters of support to utility companies, landlords, employers, and others with whom they must work so they can improve their environment to assist their recovery.

In the literature, stage 3 radiofrequency sickness is taken very seriously, and hospitalization is

recommended.²³ Unfortunately, hospitalization at this time in the U.S. would likely do more harm than good with the wireless telephone headpieces, WiFi, and myriad other radiofrequency transmitters present in hospitals. (Previously exposure was primarily occupational, not society wide.) Your help may be necessary in order to get hospitals and clinics to create low RF environments for the sake of your patients. Many people with radiofrequency sickness have trouble accessing healthcare due to the extreme toxicity of highly electrically-polluted and transmitter-ridden environments for those who already have radiofrequency sickness.

While those with full-blown radiofrequency sickness become ill quickly, often immediately, in environments highly polluted with radiofrequencies, healthy individuals also face the possibility of getting radiofrequency sickness from continued exposure. Radiofrequency sickness in healthy individuals often develops within 3-5 years of beginning overexposure, although the onset and severity of the illness depends on how often the exposure occurs, the frequency and amplitude of the radiation signal and the duration of the exposure.²³ Studies show pulsed microwaves, as utilized by modern communication devices, including transmitting electrical meters, are very potent biologically.^{1,2,3,4,23} It is important to bear these risks in mind while instituting changes.

The precautionary principle dictates that everyone should minimize their exposure to radiofrequencies from both transmitters and electrical pollution. Continued exposure to radiofrequencies increases everyone's risk of developing cancer. Thus, people should keep their cellphones off, except during brief essential calls. They should use dedicated wired or fiber optic connections for everything, but emergency use. Even having your cellphone on to send and receive texts exposes your body on an ongoing basis to pulsed microwave radiation as the phone communicates continuously intermittently with the cell tower. Wireless devices with transmitters that are continuously on (such as DECT phones) should be avoided. The installation of transmitting or poorly engineered "smart" utility meters should be halted and rolled back. Only meters that do not increase public exposure to microwave and radiofrequency radiation and "dirty" power should be used while conservative standards to protect the health of the general population during continuous exposures to electrical pollution and radiofrequency radiation are researched and established.

More detailed information can be found in the following references, in *The BioInitiative Report* at www.bioinitiative.org, at www.magdahavas.com, at www.electricalpollution.com and at www.emrpolicy.org.

References

- 1) Johnson Liakouris AG. Radiofrequency (RF) sickness in the Lilienfeld study: An effect of modulated microwaves Archives of Environmental Health; May/June 1998; 53, 3.
- 2) Santini R, Santini P, Le Ruz P, Danze JM, and Seignel M. 2003 Survey Study of People Living in the Vicinity of Cellular Phone Base Stations. Electromagnetic Biology and Medicine Vol. 22, No. 1, pp. 4149.
- 3) Hyland GJ. Physics and biology of mobile telephony. The Lancet, Vol 356, November 25, 2000.
- 4) Marha K, Musil J, and Tuha H. Electromagnetic Fields and the Life Environment. Institute of Industrial Hygiene and Occupational Diseases, Prague, Czechoslovakia. English Translation 1971
- 5) Cherry, N. 2000 Criticism of the Health Assessment in the ICNIRP Guidelines for Radiofrequency and Microwave Radiation (100 kHz- 300 GHz)
- 6) Letter from Norbert Hankin, Center for Science and Risk Assessment, Radiation Protection Division, EPA, regarding the limitations and purpose of the FCC exposure standards. [http://www.emrpolicy.org/litigation/case_law/docs/ noi_epa_response.pdf](http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf)
- 7) Identification of Research Needs Relating to Potential Biological or Adverse Health Effects of Wireless Communication, 2008, National Academy of Science. http://www.nap.edu/catalog.php?record_id=12036#toc

- 8) Sage C, Carpenter DO. 2009. Public health implications of wireless technologies, *Pathophysiology* Aug; 16(2-3):233-46.
- 9) Huss et al., "Source of Funding and Results of Studies of Health Effects of Mobile Phone Use: Systematic Review of Experimental Studies", *Environmental Health Perspectives*, 115(1): 1-4, 2007. <http://www.ehponline.org/members/2006/9149/9149.pdf>.
- 10) Hallberg O, Johansson O, Apparent decreases in Swedish public health indicators after 1997 – Are they due to improved diagnostics or to environmental factors? *Pathophysiology* Volume 16, Issue 1, June 2009, Pages 43-46.
- 11) Kane RC. 2004. A Possible Association Between Fetal/neonatal Exposure to Radiofrequency Electromagnetic Radiation and the Increased Incidence of Autism Spectrum Disorders (ASD) *Medical Hypotheses* 62, 195-197
- 12) Divan HA, Kheifets L, Obel C, Olsen J [Prenatal and Postnatal Exposure to Cell Phone Use and Behavioral Problems in Children](#) *Epidemiology* 2008;19: 523–529.
- 13) Milham S, Morgan L. A new electromagnetic exposure metric: High frequency voltage transients associated with increased cancer incidence in teachers in a California school, *American Journal of Industrial Medicine*, Volume 51, Issue 8, Date: August 2008, Pages: 579-586
- 14) Milham S. Historical evidence that electrification caused the 20th century epidemic of “diseases of civilization”. *Medical Hypotheses* DOI: 10.1016/j.mehy.2009.08.032
- 15) Havas M, Olstad A. Power quality affects teacher wellbeing and student behavior in three Minnesota Schools, *Science of the Total Environment*, Volume 402, Issues 2-3, 1 September 2008, pp. 157-162.
- 16) Havas M. 2008. Dirty Electricity Elevates Blood Sugar Among Electrically Sensitive Diabetics and May Explain Brittle Diabetes. *Electromagnetic Biology and Medicine*, 27:135-146. <http://www.informaworld.com/smpp/content~db=all?content=10.1080/15368370802072075>
- 17) Havas M. 2006. Electromagnetic hypersensitivity: biological effects of dirty electricity with emphasis on diabetes and multiple sclerosis. *Electromagnetic Biology Medicine* 25(4):259-68.
- 18) Ozen, S. 2007. Low-frequency Transient Electric and Magnetic Fields Coupling to Child Body, *Radiation Protection Dosimetry* (2007), pp. 1–6. <http://rpd.oxfordjournals.org/cgi/content/full/nmc315>
- 19) Vignati, M. and L. Giuliani, 1997. Radiofrequency exposure near high-voltage lines. *Environ Health Perspect* 105(Suppl 6):1569-1573 (1997) <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1469914>
- 20) Johansson O. Disturbance of the immune system by electromagnetic fields—A potentially underlying cause for cellular damage and tissue repair reduction which could lead to disease and impairment, *Pathophysiology*, Volume 16, Issues 2-3, August 2009, Pages 157-177.
- 21) Blank M and Goodman R. Electromagnetic Fields May Act Directly on DNA, *Journal of Cellular Biochemistry* 75:369-374 (1999)
- 22) Grant L. Microwaves Imitate Pesticides. U.S. Department of Energy Risk Management Quarterly, Volume 5-3
- 23) Dodge C. Clinical and Hygienic Aspects of Exposure to Electromagnetic Fields. Biological Effects and Health Implications of Microwave Radiation, Symposium Proceedings, Richmond, Virginia, September 17-19, 1969.
- 24) Kwon MS, et.al. 2011. GSM mobile phone radiation suppresses brain glucose metabolism *Journal of Cerebral Blood Flow & Metabolism* 31, 2293–2301
- 25) Volkow ND, et. al. Effects of Cell Phone Radiofrequency Signal Exposure on Brain Glucose Metabolism *JAMA* 2011;305(8):808-813.
- 26) Salford et al, Nerve Cell Damage in Mammalian Brain after Exposure to Microwaves from GSM Mobile Phones. *Environmental Health Perspectives*, Vol. 111(7), June 2003.
- 27) A Becker, RO “Cross Currents: The Promise of Electromedicine, The Perils of Electropollution” 1990, Tarcher/Putnam.