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July 21, 2021

To Whom It May Concern:

RE: Godelieve Richard

This patient is under my care and medical supervision. She has been diagnosed with Electromagnetic Field Sensitivity.

We have undertaken a multiphase single and double-blind study to find an effective method to evaluate electromagnetic field sensitivity. This involves setting up controlled testing conditions, electromagnetic field challenges both in single and double-blind situations and rechallenging of affirmed positive patients. The study confirmed the presence of electromagnetic field sensitivity and there was a 100 percent non-reaction to placebos in the different phases of the test. It is clear that electromagnetic field sensitivity is a real phenomenon for environmentally sensitive patients. It is evident that electromagnetic field testing is at a rudimentary stage and further studies are needed to document this. This is a condition that should be considered and not ignored in the overall treatment of this patient. Medical citations associated with the effects of electromagnetic fields on human health are included in this letter.

Many patients exhibit health problems and experience symptoms when exposed to electrical stimuli. This is due in part to the patient's bodily response to incitants.

The body functions through cellular and intracellular changes in electrical parameters. Electrical impulses originate in the sino-atrial node of the heart and initiate heart muscle contractions. Cells assimilate and excrete through osmotic changes created by differences in electrical potential. The brain communicates and functions through electrical impulses carried from one nerve synapse to another. This intricate function of the body can be affected by exposure to coherent electromagnetic fields created by power transmission and usage. In sensitive individuals, exposure to exceedingly low frequencies can create disruption in homeostasis.

Since the 2011 WHO/IARC classification of electromagnetic wireless radiation as a possibly carcinogenic, thousands of published studies show biological and health effects from electromagnetic fields. These include DNA damage, cancers, infertility, short term memory loss, increased dementia and autism, chronic fatigue, learning disabilities, and behavioral issues. We now know one mechanism that can explain these effects. The mechanism is a function of the electromagnetics of each cell—not solely about heating effects from the radiation (on which

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present FCC guidelines are based). Oxidative stress has been shown as another effect contributing to the effects from wireless radiation.

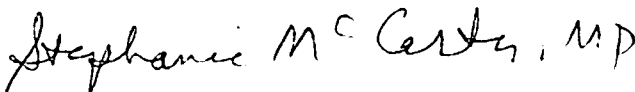
Individuals who in the past may have experienced chronic or low-level electromagnetic exposure or acute high-level exposure may exhibit symptoms resembling a feeling of shock, muscle spasms, or seizures. Others who have sensitivities to pollen, molds, and foods may experience symptoms related to the problems of electrical stimulation such as a change in the pulse rate.

Power frequency electric and magnetic fields are produced by power lines, power stations, electricity distribution faults, Wi-Fi routers, electrical appliances in the home or workplace, house wiring, cables, cars, trains, television, lights, computers, laptops, cell phones and towers, etc.

The treatment for this condition involves environmental controls, avoidance of unnecessary or excess electromagnetic stimulation, and management of inhalant and food sensitivities.

If you have any questions, please call my office at (214) 368-4132.

Sincerely,



Stephanie McCarter M.D.

SM/tp/eh

EMF REFERENCES

Health Effects:

- Neil Irvine (November 2005) "*Definition, Epidemiology and Management of Electrical Sensitivity*". Health Protection Agency Publications, Vol 10.
- Anders Ahlbom, Elisabeth Cardis, Adele Green, Martha Linet, David Savitz, Anthony Swerdlow (December 2001). "*Review of the Epidemiologic Literature on EMF and Health*". Environ Health Perspect. 109 (S6).
- Santini R, Santini P, Danze JM, Le Ruz P, Seigne M (July 2002). "*Investigation on the health of people living near mobile telephone relay stations: I/Incidence according to distance and sex*". Pathol Biol (Paris). 50(6):369-73.
- Santini R, Santini P, Danze JM, Le Ruz P, Seigne M (September 2003). "*Symptoms experienced by people in vicinity of base stations: Incidences of age, duration of exposure, location of subjects in relation to the antennas and other electromagnetic factors*". Pathol Biol (Paris). 51(7):412-5.
- Oberfeld Gerd, Navarro A. Enrique, Portoles Manuel, Maestu Ceferino, Gomez-Perretta Claudio (August 2004). "*The Microwave Syndrome - Further aspects of a Spanish Study*". Conference Proceedings.
- Electromagnetic field induced biological effects in humans. Kaszuba-Zwoińska J, Gremba J, Galdzińska-Calik B, Wójcik-Piotrowicz K, Thor PJ. Przegl Lek. 2015;72(11):636-41.
- Human disease resulting from exposure to electromagnetic fields. Carpenter DO. Rev Environ Health. 2013;28(4):159-72. doi: 10.1515/reveh-2013-0016.

- Phillips, R. D. (1986, Sept.). Health effects of ELM fields: Research and communications regulation. Toronto, Int'l Utilities Symp.
- Ketchum, E. E., Porter, W. E., & Bolton, N. E. (1978). The biological effects of magnetic fields on man. *J. Am. Ind. Hyg. Assoc.*, 39, 1-11.
- Smith, C.W., & Best, S. (1989). *Electromagnetic man*. New York: St. Martins Press.
- Shirakawa, S., Rea, W. J., Ishikawa, S., & Johnson, A.R. (Year?). Evaluation of the autonomic nervous system response by pupillographical study in the chemically sensitive patient. *Environmental Medicine*, Volume 8, No. 4, pp. 121-127, 1991.
- Randegger, E. (1988). Electromagnetic pollution. *Environ.*, 7, 22-26.
- Carpenter, R. L., & Van Ummersen, C.A. (1968). The effects of 2.4 Ghz radiation. *J. Microwave Pwr.*, 3, 3-19.
- Petersen, R. C. (1980). Bioeffects of microwaves: A review of current knowledge. *J. Occup. Med.*, 25, 103-111.
- Michaelson, S. M. (1980). Microwave biological overview. *Proc. I.E.E.E.*, 68, 60-69.
- Silverman, C. (1980). Epidemiological studies of microwave effects. *Proc. I.E.E.E.*, 68, 78-84.
- Ravitz, L. J. (1982). History, measurement, and applicability of periodic changes in the electromagnetic field in health and disease. *Ann. N.Y. Acad. Sci.*, 98, 1144-1201.
- Banks, R.S. (1988). Electric and magnetic fields: A new health issue. *Health and Environ.*, 2, 1-3.
- Electromagnetic field induced biological effects in humans. Kaszuba-Zwoińska J, Gremba J, Galdzińska-Calik B, Wójcik-Piotrowicz K, Thor PJ. *Przegl Lek.* 2015;72(11):636-41.
- Self-reporting of symptom development from exposure to radiofrequency fields of wireless smart meters in Victoria, Australia: a case series. Lamech F. *Altern Ther Health Med.* 2014 Nov-Dec;20(6):28-39.
- Excessive exposure to radiofrequency electromagnetic fields may cause the development of electrohypersensitivity. Carpenter DO. *Altern Ther Health Med.* 2014 Nov-Dec;20(6):40-2.

Cancer Effects:

- Myron Maslanyj, Terry Mee, David Renew, J Simpson, P Ansell, Stuart Allen, Eve Roman (March 2007). "Investigation of the sources of residential power frequency magnetic field exposure in the UK Childhood Cancer Study". *J. Radiol. Prot.* 27 (1): 41-58. DOI:doi:10.1088/0952-4746/27/1/002.
- Gerald Draper, Tim Vincent, Mary E. Kroll, John Swanson (2005). "Childhood cancer in relation to distance from high voltage power lines in England and Wales: a case-control study". *BMJ* (330). DOI:10.1136/bmj.330.7503.1290.
- Tore Tynes, L Klæboe, T Haldorsen (May 2003). "Residential and occupational exposure to 50 Hz magnetic fields and malignant melanoma: a population-based study". *Occup Environ Med* 60 (5): 343-7.
- J Hansen (January 2001). "Increased breast cancer risk among women who work predominantly at night". *Epidemiology* 12 (1): 74-7.
- Caraglia M, Marra M, Mancinelli F, D'Ambrosio G, Massa R, Giordano A, Budillon A, Abbruzzese A, Bismuto E (June 2004) "Electromagnetic fields at mobile phone frequency induce apoptosis and inactivation of the multi-chaperone complex in human epidermoid cancer cells". *J Cell Physiol.* 204(2):539-48.
- Leszczynski D, Joenväärä S, Reivinen J, Kuokka R (May 2002) "Non-thermal activation of the hsp27/p38MAPK stress pathway by mobile phone radiation in human endothelial cells: molecular mechanism for cancer- and blood-brain barrier-related effects". *Differentiation.* 70(2-3):120-9.
- Czyz J, Guan K, Zeng Q, Nikolova T, Meister A, Schönborn F, Schuderer J, Kuster N, Wobus AM (May 2004) "High frequency electromagnetic fields (GSM signals) affect gene expression levels in tumor suppressor p53-deficient embryonic stem cells". *Bioelectromagnetics.* 25(4):296-307.
- Nikolova T, Czyz J, Rolletschek A, Blyszczuk P, Fuchs J, Jovtchev G, Schuderer J, Kuster N, Wobus AM (October 2004) "Electromagnetic fields affect transcript levels of apoptosis-related

genes in embryonic stem cell-derived neural progenitor cells". Bioelectromagnetics. 19(12):1686-8.

- Biological effects from electromagnetic field exposure and public exposure standards. Hardell L, Sage C. Biomed Pharmacother. 2008 Feb;62(2):104-9. doi: 10.1016/j.biopha.2007.12.004. Epub 2007 Dec 31.

Neurotoxicity:

- Maria Feychting, Anders Ahlbom, F Jonsson, NL Pederson (July 2003). "*Occupational magnetic field exposure and neurodegenerative disease*". Epidemiology 14 (4): 413.
- Niklas Hakansson, P Gustavsson, Birgitte Floderus, Christof Johanan (July 2003). "*Neurodegenerative diseases in welders and other workers exposed to high levels of magnetic fields*". Epidemiology 14 (4): 420-6.
- Anders Ahlbom (2001). "*Neurodegenerative diseases, suicide and depressive symptoms in relation to EMF.*". Bioelectromagnetics (Suppl 5): S132-43.
- Sandström M, Lyskov E, Berglund A, Medvedev S, Mild KH (January 1997). "*Neurophysiological effects of flickering light in patients with perceived electrical hypersensitivity*". J Occup Environ Med. 39(1):15-22.
- Aalto S, Haarala C, Brück A, Sipilä H, Hämäläinen H, Rinne JO (July 2006) "*Mobile phone affects cerebral blood flow in humans*". J Cereb Blood Flow Metab. 26(7):885-90.
- Cao Z, Liu J, Li S, Zhao X (March 2000) "*Effects of electromagnetic radiation from handsets of cellular telephone on neurobehavioral function*". [Article in Chinese] Wei Sheng Yan Jiu 29(2):102-103.
- Esen F, Esen H (March 2006) "*Effect of electromagnetic fields emitted by cellular phones on the latency of evoked electrodermal activity*". Int J Neurosci. 116(3):321-9.
- Eulitz C, Ullsperger P, Freude G, Elbert T (October 1998) "*Mobile phones modulate response patterns of human brain activity*". Neuroreport. 9(14):3229-32.
- Freude G, Ullsperger P, Eggert S, Ruppe I (1998) "*Effects of microwaves emitted by cellular phones on human slow brain potentials*". Bioelectromagnetics. 19(6):384-7.
- Freude G, Ullsperger P, Eggert S, Ruppe I (January 2000) "*Microwaves emitted by cellular telephones affect human slow brain potentials*". Eur J Appl Physiol. 81(1-2):18.
- Edelstyn N, Oldershaw A (January 2002) "*The acute effects of exposure to the electromagnetic field emitted by mobile phones on human attention*". Neuroreport. 13(1):119-21.
- Koivisto M, Revonsuo A, Krause C, Haarala C, Sillanmäki L, Laine M, Hämäläinen H (February 2000) "*Effects of 902 MHz electromagnetic field emitted by cellular telephones on response times in humans*". Neuroreport. 11(2):413-5.
- Koivisto M, Krause CM, Revonsuo A, Laine M, Hämäläinen H (June 2000) "*The effects of electromagnetic field emitted by GSM phones on working memory*". Neuroreport. 11(8):1641-3.
- Krause CM, Sillanmäki L, Koivisto M, Häggqvist A, Saarela C, Revonsuo A, Laine M, Hämäläinen H (December 2000) "*Effects of electromagnetic fields emitted by cellular phones on the electroencephalogram during a visual working memory task*". Int J Radiat Biol. 76(12):1659-67.
- Krause CM, Sillanmäki L, Koivisto M, Häggqvist A, Saarela C, Revonsuo A, Laine M, Hämäläinen H (March 2000) "*Effects of electromagnetic field emitted by cellular phones on the EEG during a memory task*". Neuroreport. 11(4):761-4.
- Borbély AA, Huber R, Graf T, Fuchs B, Gallmann E, Achermann P (November 1999) "*Pulsed high-frequency electromagnetic field affects human sleep and sleep electroencephalogram*". Neurosci Lett. 275(3):207-10.
- D'Costa H, Trueman G, Tang L, Abdel-rahman U, Abdel-rahman W, Ong K, Cosic I (December 2003) "*Human brain wave activity during exposure to radiofrequency field emissions from mobile phones*". Australas Phys Eng Sci Med. 26(4):162.

- Huber R, Graf T, Cote KA, Wittmann L, Gallmann E, Matter D, Schuderer J, Kuster N, Borbély AA, Achermann P (October 2000) "Exposure to pulsed high-frequency electromagnetic field during waking affects human sleep EEG". *Neuroreport*. 11(15):3321-5.
- Huber R, Treyer V, Schuderer J, Berthold T, Buck A, Kuster N, Landolt HP, Achermann P (February 2005) "Exposure to pulse-modulated radio frequency electromagnetic fields affects regional cerebral blood flow". *Eur J Neurosci*. 21(4):1000-6.
- Huber R, Schuderer J, Graf T, Jütz K, Borbély AA, Kuster N, Achermann P (May 2003) "Radio frequency electromagnetic field exposure in humans: Estimation of SAR distribution in the brain, effects on sleep and heart rate". *Bioelectromagnetics*. 24(4):262-76.
- Huber R, Treyer V, Borbély AA, Schuderer J, Gottselig JM, Landolt HP, Werth E, Berthold T, Kuster N, Buck A, Achermann P (December 2002) "Electromagnetic fields, such as those from mobile phones, alter regional cerebral blood flow and sleep and waking EEG". *J Sleep Res*. 11(4):289-95 - [36] - Kramarenko AV, Tan U (July 2003) "Effects of high-frequency electromagnetic fields on human EEG: a brain mapping study". *Int J Neurosci*. 113(7):1007-19.
- Al-Khlaiwi T, Meo SA (June 2004) "Association of mobile phone radiation with fatigue, headache, dizziness, tension and sleep disturbance in Saudi population". *Saudi Med J*. 25(6):732-6.
- Abdel-Rassoul G, El-Fateh OA, Salem MA, Michael A, Farahat F, El-Batanouny M, Salem E (March 2007). "Neurobehavioral effects among inhabitants around mobile phone base stations". *Neurotoxicology*. 28(2):434-40.
- Vrijheid M, Cardis E, Armstrong BK, Auvinen A, Berg G, Blaasaas KG, Brown J, Carroll M, Chetrit A, Christensen HC, Deltour I, Feychting M, Giles GG, Hepworth SJ, Hours M, Iavarone I, Johansen C, Klæboe L, Kurttio P, Lagorio S, Lönn S, McKinney PA, Montestrucq L, Parslow RC, Richardson L, Sadetzki S, Salminen T, Schüz J, Tynes T, Woodward A; Interphone Study Group (April 2006) "Validation of short-term recall of mobile phone use for the Interphone study". *Occup Environ Med*. 63(4):237-43.
- Neurobehavioral effects among inhabitants around mobile phone base stations. Abdel-Rassoul G, El-Fateh OA, Salem MA, Michael A, Farahat F, El-Batanouny M, Salem E. *Neurotoxicology*. 2007 Mar;28(2):434-40.
- Electromagnetic hypersensitivity: evidence for a novel neurological syndrome. McCarty DE, Carrubba S, Chesson AL, Frlot C, Gonzalez-Toledo E, Marino AA. *Int J Neurosci*. 2011 Dec;121(12):670-6. doi: 10.3109/00207454.2011.608139.

Reproductive Effects:

- GM Lee, Michael Yost, RR Neutra, L Hristova, RA Hiatt (January 2002). "A nested case-control study of residential and personal magnetic field measures and miscarriages". *Epidemiology* 13 (1): 21-31.
- De-Kun Li, Roxana Odouli, S Wi, T Janevic, I Golditch, TD Bracken, R Senior, R Rankin, R Iriye (January 2002). "A population-based prospective cohort study of personal exposure to magnetic fields during pregnancy and the risk of miscarriage". *Epidemiology* 13 (1): 9-20.
- YN Cao, Y Zhang, Y Liu (August 2006). "Effects of exposure to extremely low frequency electromagnetic fields on reproduction of female mice and development of offspring". *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi* 24 (8): 468-70.

Dermatologic Effects:

- Eriksson N, Höög J, Mild KH, Sandström M, Stenberg B (December 1997). "The psychosocial work environment and skin symptoms among visual display terminal workers: a case referent study". *Int J Epidemiol*. 26(6):1250-7.
- Stenberg B, Bergdahl J, Edvardsson B, Eriksson N, Lindén G, Widman L (October 2002). "Medical and social prognosis for patients with perceived hypersensitivity to electricity and skin symptoms related to the use of visual display terminals". *Scand J Work Environ Health*. 28(5):349-57.

- Gangi S, Johansson O (December 1997). "Skin changes in "screen dermatitis" versus classical UV- and ionizing irradiation-related damage--similarities and differences". *Exp Dermatol.* 6(6):283-91.
- Johansson O, Hilliges M, Björnhagen V, Hall K (October 1994). "Skin changes in patients claiming to suffer from "screen dermatitis": a two-case open-field provocation study.". *Exp Dermatol.* 3(5):234-8.
- Hillert L, Hedman BK, Söderman E, Arnetz BB (November 1999) "Hypersensitivity to electricity: working definition and additional characterization of the syndrome". *J Psychosom Res.* 47(5):429-38.
- Stenberg B, Bergdahl J, Edvardsson B, Eriksson N, Lindén G, Widman L (October 2002) "Medical and social prognosis for patients with perceived hypersensitivity to electricity and skin symptoms related to the use of visual display terminals". *Scand J Work Environ Health.* 28(5):349-57.

Thyroid Effects:

- Rajkovic V, Matavulj M, Johansson O (July 2005). "Histological characteristics of cutaneous and thyroid mast cell populations in male rats exposed to power-frequency electromagnetic fields". *Int J Radiat Biol.* 81(7):491-9.

Immunological Effects:

- Belyaev IY, Hillert L, Protopopova M, Tamm C, Malmgren LO, Persson BR, Selivanova G, Harms-Ringdahl M (April 2005) "915 MHz microwaves and 50 Hz magnetic field affect chromatin conformation and 53BP1 foci in human lymphocytes from hypersensitive and healthy persons". *Bioelectromagnetics.* 26(3):173-84
- D'Ambrosio G, Massa R, Scarfi MR, Zeni O (January 2002) "Cytogenetic damage in human lymphocytes following GMSK phase modulated microwave exposure". *Bioelectromagnetics.* 23(1):7-13
- Donnellan M, McKenzie DR, French PW (July 1997) "Effects of exposure to electromagnetic radiation at 835 MHz on growth, morphology and secretory characteristics of a mast cell analogue, RBL-2H3". *Cell Biol Int.* 21(7):427-39
- French PW, Donnellan M, McKenzie DR (June 1997) "Electromagnetic radiation at 835 MHz changes the morphology and inhibits proliferation of a human astrocytoma cell line". *Bioelectrochem Bioenerg.* 43:13-18
- Sarimov R, Malmgren LOG, Markova E, Persson BRR, Belyaev IY (2004) "Nonthermal GSM Microwaves Affect Chromatin Conformation in Human Lymphocytes Similar to Heat Shock". *IEEE Trans Plasma Sci.* 32:1600-1608
- Singh B, Bate LA (November 1996) "Responses of pulmonary intravascular macrophages to 915-MHz microwave radiation: ultrastructural and cytochemical study". *Anat Rec.* 246(3):343-55
- Rubin GJ, Das Munshi J, Wessely S (April 2005) "Electromagnetic hypersensitivity: a systematic review of provocation studies". *Psychosom Med.* 67(2):224-32
- Rubin GJ, Hahn G, Everitt BS, Cleare AJ, Wessely S (April 2006) "Are some people sensitive to mobile phone signals? Within participants double blind randomised provocation study". *BMJ.* 332(7546):886-91
- Oftedal G, Straume A et al (May 2007) "Mobile phone headache: a double blind, sham-controlled provocation study". *Cephalalgia.* 27(5):447-55 -
- Stacy Eltiti, Denise Wallace, Anna Ridgewell, Konstantina Zougkou, Riccardo Russo, Francisco Sepulveda, Dariush Mirshekar-Syahkal, Paul Razor, Roger Deeble, and Elaine Fox (July 2007) "Does Short-Term Exposure to Mobile Phone Base Station Signals Increase Symptoms in Individuals who Report Sensitivity to Electromagnetic Fields? A Double-Blind Randomised Provocation Study". *Environmental Health Perspectives (EHP)*

Cardiac Effects:

- Easterly, C. E. (1982). Cardiovascular risk from exposure to static magnetic fields. *J. Am. Ind. Hyg. Assoc.*, 43, 533-539.
- Wever, R. A. (1973). Human circadian rhythms under the influence of weak electric fields and the different aspects of these studies. *Int. J. Biometeor.*, 17, 227-232.

Ophthalmic Effects:

- Clealry, S. (1980). Microwave cataractogenesis. *Proc. I.E.E.E.*, 68, 49-55.
- McCally, R. L., Farrell, R. A., Burgeron, C. B., et. al. (1986). Neuronizing radiation damage in the eye. *Johns Hopkins Apl. Tech. Dig.*, 7, 73-91.
- Paz, J.D., Milliken, R., Ingram, W.T., Arthur, F., and Atkin, A. (1987). Potential ocular damage from microwave exposure during electrosurgery: Dosimetric survey. *J. Occup. Med.*, 29, 580-583.