

Smart Meters: Correcting the Gross Misinformation

[11 juin 2012]

<http://maisonsaine.ca/smart-meters-correcting-the-gross-misinformation/>

Quebec-based magazine *La Maison du 21e siecle* asked physician David O. Carpenter, former founding dean of the University at Albany (NY)'s School of Public Health, to comment an open letter published in the Montreal daily *Le Devoir* last May 24. This letter claimed wireless smart meters pose no risk to public health. More than fifty international experts contributed to the following rebuttal.

We, the undersigned are a group of scientists and health professionals who together have coauthored hundreds of peer-reviewed studies on the health effects of electromagnetic fields (EMFs). We wish to correct some of the gross misinformation found in the letter regarding wireless "smart" meters that was published in the Montreal daily *Le Devoir* on May 24. Submitted by a group Quebec engineers, physicists and chemists, the letter in question reflects an obvious lack of understanding of the science behind the health impacts of the radiofrequency (RF)/microwave EMFs emitted by these meters.

The statement that « Thousands of studies, both epidemiological and experimental in humans, show no increase in cancer cases as a result of exposure to radio waves of low intensity... » is false (1). In fact, only a few such studies — two dozen case-control studies of mobile phone use, certainly not thousands, have reported no elevations of cancer, and most were funded by the wireless industry. In addition, these reassuring studies contained significant experimental design flaws, mainly the fact that the populations followed were too small and were followed for a too short period of time.

Non industry-funded studies have clearly demonstrated a significant increase in cancer cases among individuals who have suffered from prolonged exposure to low-level microwaves, transmitted notably by radio antennas. The effects were best documented in meta-analyses that have been published and that include grouped results from several different studies: these analyses consistently showed an increased risk of brain cancer among regular users of a cell phone who have been exposed to microwaves for at least ten years.

Brain Cancer Rates

Furthermore, the argument that brain cancer rates do not indicate an overall increase in incidence is not evidence that cell phones are safe: the latency for brain cancer in adults after environmental exposure can be long, up to 20-30 years. Most North Americans haven't used cell phones extensively for that long. The evidence of the link between long-term cell phone use and brain cancer comes primarily from Northern Europe, where cell phones have been commonly used since the 1990s. Nevertheless, the most recent collection of primary brain tumors mined from pathology units in Australia showed brain cancer incidence rose by about 35% between 2000 and 2008 in the Australian Capital Territory and New South Wales (total population : more than 7 million).

Children are especially at risk. In May 2012, the U.K.'s Office of National Statistics reported a 50 percent increase in incidence of frontal and temporal lobe tumors in children between 1999 and 2009. This statistic is especially disturbing since in May 2011, after reviewing the published scientific literature regarding cancers affecting cell phone users, the International Agency for

Research on Cancer (IARC) classified radiofrequency radiation as a 2B, possible human carcinogen. Despite the absence of scientific consensus, the evidence is sufficiently compelling for any cautious parent to want to reduce their loved one's exposure to RF/microwave emissions as much as possible, as recommended by various countries such as Austria, Belgium, Germany, Russia and the United Kingdom.

Electrosensitivity

Public fears about wireless smart meters are well-founded. They are backed by various medical authorities such as those of the Santa Cruz County (California) Public Health Department. These authorities are worried about the growing number of citizens who say they have developed electrohypersensitivity (EHS), especially since for many of them, the symptoms developed after the installation of such meters (it takes some time for most people to link the two events).

Since the turn of the millennium, people are increasingly affected by ambient microwaves due to the growing popularity of wireless devices such as cell phones and Wi-Fi Internet. Therefore, the mass deployment of smart grids could expose large chunks of the general population to alarming risk scenarios without their consent. According to seven surveys done in six European countries between 2002 and 2004, about 10% of Europeans have become electrosensitive. The most famous person to publicly reveal her electrosensitivity is Gro Harlem Brundtland, formerly Prime Minister of Norway and retired Director of the World Health Organization (WHO).

While there is no consensus on the origins and mechanisms of EHS, many physicians and other specialists around the world have become aware that EHS symptoms (neurological dermatological, acoustical, etc.) seem to be triggered by exposure to EMF levels well below current international exposure limits, which are established solely on short-term thermal effects (2). Organizations such as the Austrian Medical Association and the American Academy of Environmental Medicine have recognized that the ideal way to treat of EHS is to reduce EMF exposure.

Therefore, caution is warranted because the growing variety of RF/microwave emissions produced by many wireless devices such as smart meters have never been tested for their potential biological effects.

Well-known bioeffects

While the specific pathways to cancer are not fully understood, it is scientifically unacceptable to deny the weight of the evidence regarding the increase in cancer cases in humans that are exposed to high levels of RF/microwave radiation.

The statement that « there is no established mechanism by which a radio wave could induce an adverse effect on human tissue other than by heating » is incorrect, and reflects a lack of awareness and understanding of the scientific literature on the subject. In fact, more than a thousand studies done on low intensity, high frequency, non-ionizing radiation, going back at least fifty years, show that some biological mechanisms of effect do not involve heat. This radiation sends signals to living tissue that stimulate biochemical changes, which can generate various symptoms and may lead to diseases such as cancer.

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. Recent publications have documented the generation of free radicals, increased permeability of the blood brain barrier allowing potentially toxic chemicals to enter the brain, induction of genes, as well as altered electrical and metabolic activity in human brains upon application of cell phone RF/microwaves similar to those produced by smart meters.

These effects are cumulative and depend on many factors including RF/microwave levels, frequency, waveform, exposure time, biovariability between individuals and combination with other toxic agents. Clear evidence that these microwaves are indeed bioactive has been shown by the fact that low-intensity EMFs have proven clinically useful in some circumstances. Pulsed EMFs have long been used to successfully treat bone fractures that are resistant to other forms of therapy. More recently, frequency-specific, amplitude-modulated EMFs have been found useful to treat advanced carcinoma and chronic pain.

High frequency EMFs such as the microwaves used in cell phones, smart meters, Wi-Fi and cordless "DECT" phones, appear to be the most damaging when used commonly. Most of their biological effects, including symptoms of electrohypersensitivity, can be seen in the damage done to cellular membranes by the loss of structurally-important calcium ions. Prolonged exposure to these high frequencies may eventually lead to cellular malfunction and death.

Furthermore, malfunction of the parathyroid gland, located in the neck just inches from where one holds a cell phone, may actually cause electrohypersensitivity in some people by reducing the background level of calcium ions in the blood. RF/microwave radiation is also known to decrease the production of melatonin, which protects against cancer, and to promote the growth of existing cancer cells.

Early warning scientists attacked

In recommending that the Precautionary Principle be applied in EMF matters, the European Environment Agency's Director Jacqueline McGlade wrote in 2009: "We have noted from previous health hazard histories such as that of lead in petrol, and methyl mercury, that 'early warning' scientists frequently suffer from discrimination, from loss of research funds, and from unduly personal attacks on their scientific integrity. It would be surprising if this is not already a feature of the present EMF controversy... » Such unfortunate consequences have indeed occurred.

The statement in the *Le Devoir* letter that « if we consider that a debate should take place, it should focus exclusively on the effects of cell phones on health » is basically an acknowledgement that there is at least some reason to be concerned about cell phones. However, while the immediate exposure from a cell phone is of much greater intensity than the exposure from smart meters, cell phone use is temporary.

Smart meters

As Australian Associate Professor of neurosurgery Vini G. Khurana reports, adverse neurological effects have been reported in people who sustain close proximity to wireless meters, especially under 10 feet (3 metres).

A wireless smart meter produces radiofrequency microwave radiation with two antennas in approximately the same frequency range (900 MHz to 2.4 GHz) as a typical cell tower. But, depending on how close it is to occupied space within a home, a smart meter can cause much higher RF exposures than cell towers commonly do. If a smart meter is located on a common wall with a bedroom or kitchen rather than a garage wall, for example, the RF exposure can be the same as being within 200 to 600 feet distance of a cell tower with multiple carriers. With both cell towers and smart meters, the entire body is immersed by microwaves that go out in all directions, which increases the risk of overexposure to many sensitive organs such as the eyes and testicles. With a cell phone, people are exposed to microwaves primarily in the head and neck (unless using speaker mode), and only when they use their device.

Wireless smart meters typically produce atypical, relatively potent and very short pulsed RF/microwaves whose biological effects have never been fully tested. They emit these

millisecond-long RF bursts on average 9,600 times a day with a maximum of 190,000 daily transmissions and a peak level emission two and a half times higher than the stated safety signal, as the California utility Pacific Gas & Electric recognized before that State's Public Utilities Commission. Thus people in proximity to a smart meter are at risk of significantly greater aggregate of RF/microwave exposure than with a cell phone, not to mention the cumulative exposure received by people living near multiple meters mounted together, pole-mounted routers or utility collector meters using a third antenna to relay RF signals from 500 to 5,000 homes.

A technical study performed by Sage Associates in California indicates that RF levels from various scenarios depicting normal smart meter installation and operation may violate even the out-of-date US public safety standards which only consider acute thermal effects. This can happen when a person stands close to the meter to read the power consumption, or touches it, or shades the meter face with a hand to better read it. Emissions are also increased by reflective materials, such as stainless steel, other metals and mirrors, which can re-radiate stronger than the otherwise unaltered background. Microwaves are absorbed and dissipated by partially conductive materials, such as cement and special RF shielding paints and fabrics.

In addition to the erratic bursts of modulated microwaves emitted by wireless smart meters transferring usage data to electric, gas and water utilities, wireless as well as wired smart (powerline communication) meters are also a major source of "dirty electricity" (electrical interference of high frequency voltage transients typically of kilohertz frequencies). Some scientists, such as American epidemiologist Sam Milham, believe that many of the health complaints about smart meters may also be caused by dirty electricity generated by the « switching » power supply activating all smart meters. Since the installation of filters to reduce dirty electricity circulating on house wiring has been found to relieve symptoms of EHS in some people, this method should be considered among the priorities aimed at reducing potential adverse impacts. Indeed, the Salzburg State (Austria) Public Health Department confirms its concern about the potential public health risk when in coming years almost every electric wire and device will emit such transient electric fields in the kilohertz-range due to wired smart meters.

Rather be safe than sorry

The apparent adverse health effects noted with smart meter exposure are likely to be further exacerbated if smart appliances that use wireless communications become the norm and further increase unwarranted exposure.

To date, there have been few independent studies of the health effects of such sources of more continuous but lower intensity microwaves. However, we know after decades of studies of hazardous chemical substances, that chronic exposure to low concentrations of microwaves can cause equal or even greater harm than an acute exposure to high concentrations of the same microwaves.

This is why so many scientists and medical experts urgently recommend that measures following the Precautionary Principle be applied immediately — such as using wired meters — to reduce biologically inappropriate microwave exposure. We are not advocating the abolishment of RF technologies, only the use of common sense and the development and implementation of best practices in using these technologies in order to reduce exposure and risk of health hazards.

- David O. Carpenter, MD, Director, Institute for Health & the Environment, University at Albany, USA
- Franz Adlkofer, M.D., Chairman of the Pandora Foundation, Coordinator of the European Reflex Report on DNA-damage by cellphone radiation, Neuendorf, Germany
- M. S. H. Al Salameh, PhD, Professor of Electrical Engineering, University of Science & Technology, Irbid, Jordan
- Jennifer Armstrong, MD, Past President, American Society for Environmental Medicine, Founder, Ottawa Environmental Health Clinic, Ontario, Canada
- Pierre L. Auger, MD, Occupational medicine, Multiclinique des accidentés 1464, Montreal, Quebec, Canada
- Igor Beliaev, PhD, Head research scientist, Cancer Research Institute, Slovak Academy of Sciences, Bratislava, Slovak republic
- Fiorella Belpoggi, PhD, Director Cesare Maltoni Cancer Research Center, Ramazzini Institute, Bologna, Italy
- Dominique Belpomme, MD, Director of the European Cancer and Environment Research Institute, Brussels, Belgium
- Martin Blank, PhD, former President, Bioelectromagnetics Society, Special Lecturer, Department of Physiology and Cellular Biophysics, Columbia University Medical Center, New York, USA
- Barry Breger, MD, Centre d'intégration somatosopique (orthomolecular medicine), Montreal, Quebec
- Simona Carrubba, PhD, Prof. Biophysics, Daemen College, Amherst, NY, Associate Researcher, Neurology, Buffalo General Hospital, Buffalo, NY
- John Cline, MD, Professor, Institute for Functional Medicine, Federal Way, WA, USA, Medical Director, Cline Medical Centre, Nanaimo, BC, Canada
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- Christos Georgiou, Prof. Biochemistry, Biology Department, University of Patras, Greece
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- Livio Giuliani, PhD, Senior Researcher, National Insurance Institute (INAIL), Chief of Radiation and Ultrasounds Research Unit, Rome, Italy
- Yury Grigoriev, PhD, Chair Russian National Committee on Non-Ionizing Radiation Protection, Moscow, Russia
- Settimio Grimaldi, PhD, Director, Institute of Translational Pharmacology (Neurobiology and molecular medicine), National Research Council, Rome, Italy
- Magda Havas, PhD, Centre for Health Studies, Trent University, Canada
- Lennart Hardell, MD, Professor of Oncology, University Hospital, Örebro, Sweden
- Denis L. Henshaw, PhD, Professor of Physics, Head of The Human Radiation Effects Group, University of Bristol, UK
- Ronald B. Herberman, MD, Chairman of Board, Environmental Health Trust, and Founding Director emeritus, University of Pittsburgh Cancer Institute, USA
- Donald Hillman, PhD, Dairy Science, Professor Emeritus, Department of Animal Science, Michigan State University, USA
- Isaac Jamieson, PhD, Environmental Science (electromagnetic phenomena in the built environment), independent architect, scientist and environmental consultant, Hertfordshire, UK
- Olle Johansson, PhD, Professor of Neuroscience (Experimental Dermatology Unit), Karolinska Institute, Stockholm, Sweden
- Yury Kronn, PhD, Soviet authority on physics of nonlinear vibrations and high frequency electromagnetic vibrations, founder of Energy Tools International, Oregon, USA

- Vini G. Khurana, MBBS, Associate of Professor of Neurosurgery, Australian National University, Australia
- Henry Lai, PhD, Professor of Bioengineering, University of Washington School of Medicine, Seattle, WA, USA
- Abraham R. Liboff, PhD, Professor Emeritus, Department of Physics, Oakland University, Rochester, Michigan, USA
- Don Maisch, PhD, Researcher on radiation exposure standards for telecommunications frequency, EMFacts Consultancy, Tasmania, Australia
- Erica Mallery-Blythe, MD, Emergency Medicine Physician, England
- Andrew A. Marino, MD, Professor of Neurology, LSU Health Sciences Center, Shreveport, LA, USA
- Karl Maret, MD, President, Dove Health Alliance, Aptos, CA, USA
- Fiorenzo Marinelli, PhD, Researcher on biological effects of EMFs, Institute of Molecular Genetics, National Research Council, Bologna, Italy
- Andrew Michrowski, PhD, Director, Planetary Association for Clean Energy, Ottawa, Canada
- Sam Milham, MD, former chief epidemiologist, Washington State Department of Health, USA
- Joel M. Moskowitz, PhD, Director, Center for Family and Community Health, School of Public Health, University of California, Berkeley
- Gerd Oberfeld, MD, Public Health Department, Salzburg State Government, Austria
- Mike O'Carroll, PhD, Professor Emeritus (Applied Mathematics), University of Sunderland, UK
- Jerry L. Phillips, PhD, Director, Center for Excellence in Science, Department of Chemistry and Biochemistry, University of Colorado, USA
- John Podd, PhD, Professor of Psychology (experimental neuropsychology), Massey University, New-Zeland
- William J. Rea, MD, thoracic and cardiovascular surgeon, founder of the Environmental Health Center, Dallas, Tx, USA
- Elihu D. Richter, MD, Professor, Hebrew University-Hadassah School of Public Health and Community Medicine, Jerusalem, Israel
- Leif G. Salford, MD, Senior Professor of Neurosurgery, Lund University, Sweden
- Nesrin Seyhan, MD, Founder and Chair of Biophysics, Medical Faculty of Gazi University, Turkey
- Cyril W. Smith, PhD, lead author of "Electromagnetic Man", retired from Electronic and Electrical Engineering, University of Salford, UK
- Morando Soffritti, MD, Scientific Director of the European Foundation for Oncology and Environmental Sciences "B. Ramazzini" in Bologna, Italy
- Carlos Sosa, MD, surgeon affected by the Microwave syndrome, Medellin, Columbia
- Antoinette "Toni" Stein, PhD, Collaborative on Health and the Environment (CHE-EMF Working Group), Co-Coordinator, Berkeley, CA, USA
- Stanislaw Szmigielski, MD, PhD Professor of Pathophysiology, Consulting Expert, former director of Microwave Safety, Military Institute of Hygiene and Epidemiology, Warsaw, Poland
- Lauraine Vivian, PhD, Senior Lecturer, Primary Health Care Directorate, Faculty of Health Sciences, University of Cape Town, South Africa.
- Bradford S. Weeks, MD, Director, The Weeks Clinic, Clinton, WA, USA
- Stelios A. Zinelis, MD, Vice-President, Hellenic Cancer Society, Cefallonia, Greece



EXHIBIT B

LETTERS FROM PHYSICIANS

[REDACTED]

November 27, 2011

[REDACTED]

Dear Pacific Gas & Electric Company and California Public Utilities Commission:

My patient, [REDACTED], began suffering symptoms shortly after the installation of the wireless transmitting smart meters at his [REDACTED] residence.

The symptoms include headaches, insomnia, heart palpitations, tinnitus and an inability to concentrate fully. Prior to the installation of the wireless smart meters, [REDACTED] was a perfectly healthy 35-year-old individual. Over the past several months, his quality of life has deteriorated significantly and he reports that the only way to reduce his symptoms is to seek temporary residence in communities that have not implemented the smart meter technology. This has put considerable stress on [REDACTED] and his wife as they may be forced from their home, community and places of employment.

As the symptoms occurred soon after [REDACTED] was exposed to two banks of smart meters (approximately 10 devices) that are within 15 feet of his bedroom and the fact that many other California citizens are reporting similar conditions after the installation of their smart meters, I am of the opinion that smart meter technology cannot be ruled out as a potential cause for [REDACTED]'s health.

Because of this, if possible, I do not think it is unreasonable to honor this patient's request to remove the above mentioned smart meters and replace them with the non-transmitting analog meters to see if the patient symptomatically feels better.

Sincerely,

[REDACTED]
MD

[REDACTED]

April 24, 2012

[REDACTED]

Dear Pacific Gas & Electric Company,

My patient, [REDACTED], has been complaining of electro-hypersensitivity symptoms since last September. The symptoms include headaches, trouble sleeping, heart palpitations, tinnitus and an inability to focus. He reports that the symptoms occurred shortly after the bank of smart meters were installed 10 feet from his bedroom in his San Francisco apartment building.

It is my understanding the smart meters were taken out of the building in January. Shortly after the meters were taken out, [REDACTED] and his wife were able to move back into their home and his symptoms began to subside. There was a noticeable reduction in headaches and he was again able to sleep adequately.

During the past three months [REDACTED] has had to spend time in different South Bay homes for work reasons. Each of these homes had smart meters and in all of the cases where the meter was located in the vicinity of his sleeping room, the headaches, tinnitus and sleep disturbances reoccurred. [REDACTED] reports that he has now become sensitive to wireless communication technology and can no longer use a cell phone, be near cell towers or use computer equipment that operate using wi-fi without getting a headache. Prior to September, 2011 he was able to use all of these technologies with no symptoms.

As my patient appears to be part of the 3-5% of Californians who have become sensitive to wireless technologies and the dirty electricity they create, I recommend that no smart meters be installed at his home. The analog meters are the safest technology for my patient.

Sincerely,

[REDACTED] MD

[REDACTED]

October 16th, 2012

To Whom It May Concern,

My patient [REDACTED] D.O.B. [REDACTED] has Electromagnetic Hypersensitivity also known as EMF sensitivity. This causes him to get a headache and/or difficulties concentrating and heart palpitations when exposed to electromagnetic radiation. Approximately 3% of the population of California has this illness now and the numbers are rising quickly. In Sweden this is now considered a disability.

I am writing to you today to request that you make some reasonable accommodations for [REDACTED] so that he may continue to work in his office setting without discomfort. These accommodations are:

1. [REDACTED] should not sit under fluorescent lights.
2. His work cubicle should be located as far away from the wire-less router as possible.
3. Computers should be modified to limit radiation exposure to decrease the frequency and severity of his symptoms.
4. A wired phone rather than a cordless phone should be used.
5. Exposure to Smart Meters should be avoided.

For more information please see the website "Citizens for Safe Technology"

Sincerely, [REDACTED]



EXHIBIT C

EVIDENCE FOR ELECTRO-HYPERSENSITIVITY

Electromagnetic hypersensitivity: evidence for a novel neurological syndrome.

McCarty DE, Carrubba S, Chesson AL, Frilot C, Gonzalez-Toledo E, Marino AA.

Department of Neurology, LSU Health Sciences Center, Shreveport, Louisiana 71130-3932. USA.

Abstract

OBJECTIVE: We sought direct evidence that acute exposure to environmental-strength electromagnetic fields (EMFs) could induce somatic reactions (EMF hypersensitivity).

METHODS: The subject, a female physician self-diagnosed with EMF hypersensitivity, was exposed to an average (over the head) 60-Hz electric field of 300 V/m (comparable with typical environmental-strength EMFs) during controlled provocation and behavioral studies.

RESULTS: In a double-blinded EMF provocation procedure specifically designed to minimize unintentional sensory cues, the subject developed temporal pain, headache, muscle twitching, and skipped heartbeats within 100 s after initiation of EMF exposure ($p < .05$). The symptoms were caused primarily by field transitions (off-on, on-off) rather than the presence of the field, as assessed by comparing the frequency and severity of the effects of pulsed and continuous fields in relation to sham exposure. The subject had no conscious perception of the field as judged by her inability to report its presence more often than in the sham control.

DISCUSSION: The subject demonstrated statistically reliable somatic reactions in response to exposure to subliminal EMFs under conditions that reasonably excluded a causative role for psychological processes.

CONCLUSION: EMF hypersensitivity can occur as a bona fide environmentally inducible neurological syndrome.

Radiation from Cordless Phones Causes Heart Irregularities, According to New Research Published Today in the European Journal of Oncology

October 23, 2010. Boulder, CO. Cordless phones, which transmit a similar pulsed signal as Wi-Fi networks at 2.4 Gigahertz, have been shown to impact heart rate in new research published today in the *European Journal of Oncology*.

READ ABSTRACT

The double-blind, peer reviewed study validates the condition complained of by increasing numbers of people across the globe today called 'electrosensitivity', demonstrating immediate effects on heart rate, almost doubling the heart rate in some cases. The study, "Provocation Study using Heart Rate Variability Shows Radiation from 2.4 GHz Cordless Phone Affects Autonomic Nervous System" (Eur. J. Oncol. Library, vol. 5) was led by Prof. Magda Havas, PhD of the Environmental & Resources Studies Department at Trent University, Canada. Co-investigators included Jeffrey Marrongelle, Bernard Pollner, Elizabeth Kelley, Camilla R.G. Rees and Lisa Tully.

Patients today experiencing electrohypersensitivity symptoms are commonly put on drugs for other conditions with similar symptoms, instead of being taught how to create an electromagnetically clean environment to eliminate symptoms.

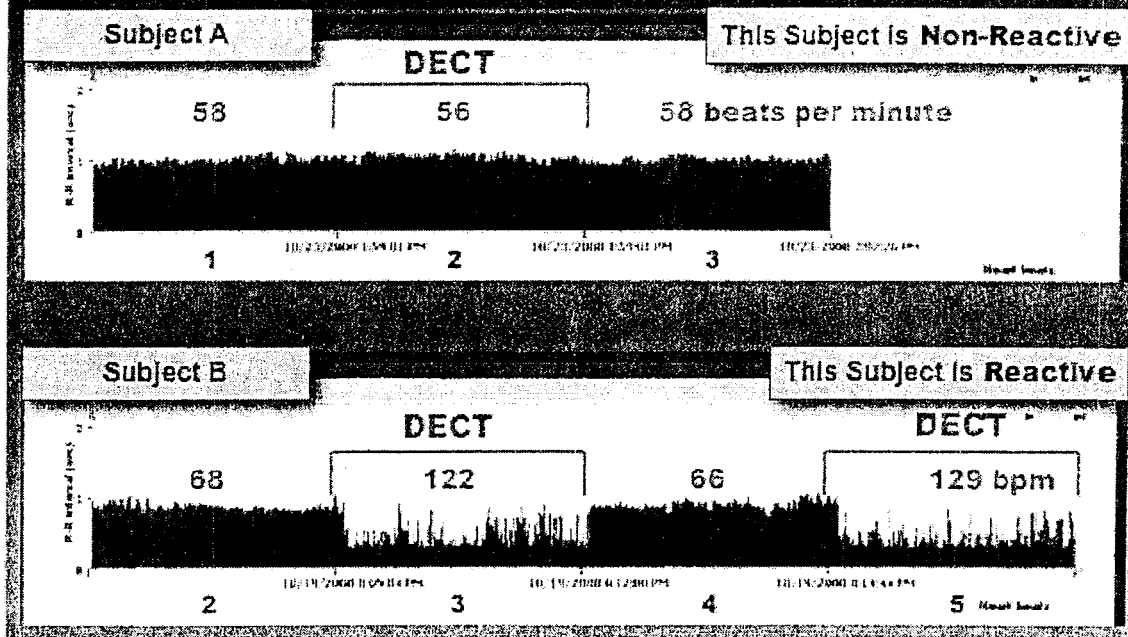
Havas' new study adds to the growing interest in the health effects of cell phones, which also transmit microwave radiation, broadening the focus beyond cell phones' association with brain tumors to their potential effect on other systems, including the heart. It also raises serious concern about risks of exposing schoolchildren to Wi-Fi networks, providing a possible explanation for why some children in schools with Wi-Fi are being diagnosed with, and medicated for, heart irregularities that they believe may linked to Wi-Fi. (See CBS News Coverage on Dangers of Wi-Fi in School and Canadian Global TV Coverage of Dangers of Wi-Fi in School)

"What we found is what many people have said for a long time about devices that emit microwaves," stated Dr. Havas. "People don't just feel ill, their heart begins to race and this is measurable with medical heart monitoring devices."

AUDIO INTERVIEW WITH DR. HAVAS

In the image below, from the study *"Provocation Study using Heart Rate Variability Shows Radiation from 2.4 GHz Cordless Phone Affects Autonomic Nervous System"* by Havas et al, Subject B experienced an increase in heart rate on exposure to a nearby portable phone. The heart rate immediately returned to the baseline after the cordless phone was unplugged.

Real Time Monitoring of Heart Beat with subjects exposed to a cordless DECT phone



[Download Image Here](#)

Havas' study in the *European Journal of Oncology* on heart rate variability was blinded, which means that the volunteers did not know when the phone was on or off. Forty percent (40%) of subjects had a moderate to severe reaction only when the phone's base station was on, and emitting microwaves. Those who responded experienced arrhythmia (irregular beats of the heart) and/or tachycardia (rapid heart rate). The symptoms were often accompanied by feelings of pain or pressure in the chest and anxiety that would appear and disappeared for no apparent reason.

This is the first study documenting immediate and dramatic changes in heart rate associated with microwave radiation exposure at levels of exposure well below (0.5%) federal guidelines in Canada and the United States (1000 microW/cm²). It points to the extraordinary inadequacy of current exposure guidelines to protect the public's health.

Havas states, "While not everyone who is electrically sensitive responds in this manner, those who do will have difficulty being in environments where microwave radiation is present, which is virtually everywhere in our modern, wireless culture." She adds, "Cordless phones and cell phones as well as wireless computers and wi-fi networks generate this form of microwave radiation."

Additional symptoms of EHS include headaches, fatigue, difficulty concentrating, poor short-term memory, difficulty sleeping, skin problems, tinnitus, nausea, and dizziness. Many of these symptoms are subjective and difficult to measure.

Havas' study heralds the ability of health practitioners to determine if cardiac irregularities might be

triggered by electromagnetic radiation, using readily available assessment technology, before resorting to invasive or chemical symptom-suppressing cardiac therapeutics.

READ STUDY PUBLISHED IN THE EUROPEAN JOURNAL OF ONCOLOGY October 23, 2010

Dr. Havas is a world-renowned expert in electromagnetic fields. Her teaching and research is concerned with the biological effects of electromagnetic pollution including radio frequency radiation, electric and magnetic fields, dirty electricity and ground current. She is author of the BRAG Antenna Ranking of Schools Report, which teaches schools how radiation exposure from neighborhood cell phone towers and antennas can be assessed and remediated, Zory's Archives, an ongoing review of thousands of recently released studies on the biological effects of electromagnetic fields, dating back over a half century, drawn from U.S. government and military, and Russian and Eastern European, sources, and co-author of "Public Health SOS: The Shadow Side of the Wireless Revolution".



EXHIBIT D

STATEMENT FROM SANTA CRUZ COUNTY PUBLIC HEALTH
OFFICIAL CITING RISKS OF SMARTMETER™ PROGRAM



County of Santa Cruz

HEALTH SERVICES AGENCY

POST OFFICE BOX 962, 1080 EMELINE AVE., SANTA CRUZ, CA 95061-0962
TELEPHONE: (831) 454-4114 FAX: (831) 454-5049 TDD: (831) 454-4123

Poki Stewart Namkung, M.D., M.P.H.
Health Officer
Public Health Division

Memorandum

Date: January 13, 2012
To: Santa Cruz County Board of Supervisors
From: Poki Stewart Namkung, M.D., M.P.H. *PON*
Health Officer
Subject: Health Risks Associated With SmartMeters

Overview

On December 13, 2011, Santa Cruz County Board of Supervisors directed the Public Health Officer to return on January 24, 2012, with an analysis of the research on the health effects of SmartMeters.

Background

In order to analyze the potential health risks associated with SmartMeters, the following questions should be asked:

- 1) What is the SmartMeter system and what is the potential radiation exposure from the system?
- 2) What scientific evidence exists about the potential health risks associated with SmartMeters?
- 3) Are there actions that the public might take to mitigate any potential harm from SmartMeters?

SmartMeters are a new type of electrical meter that will measure consumer energy usage and send the information back to the utility by a wireless signal in the form of pulsed frequencies within the 800 MHz to 2400MHz range, contained in the microwave portion of the electromagnetic spectrum. SmartMeters are considered part of 'smart grid' technology that includes: a) a mesh network or series of pole-mounted wireless antennas at the neighborhood level to collect and transmit wireless information from all SmartMeters in that area back to the utility; b) collector meters, which are a special type of SmartMeter that collects the radiofrequency or microwave radiation signals from many surrounding

buildings (500-5000 homes or buildings) and sends the information back to the utility; and c) proposed for the future, a power transmitter to measure the energy use of individual appliances (e.g. washing machines, clothes dryers, dishwasher, etc) and send information via wireless radio frequency signal back to the SmartMeter. The primary rationale for SmartMeters and grid networks is to more accurately monitor and direct energy usage

The public health issue of concern in regard to SmartMeters is the involuntary exposure of individuals and households to electromagnetic field (EMF) radiation. EMFs are everywhere, coming from both natural and man-made sources. The three broad classes of EMF are:

- extremely low frequency, ELF (from the sun or powerlines)
- radio frequency, RF (from communication devices, wireless devices, and SmartMeters)
- extremely high frequency, known as ionizing radiation (x-rays and gamma rays)

Much of this exposure is beyond our control and is a matter of personal choice; however, public exposure to RF fields is growing exponentially due to the proliferation of cell phones, and wireless fidelity (Wi-Fi) technology. To understand the relationship between EMF from SmartMeters and other sources, it is helpful to view the electromagnetic spectrum:

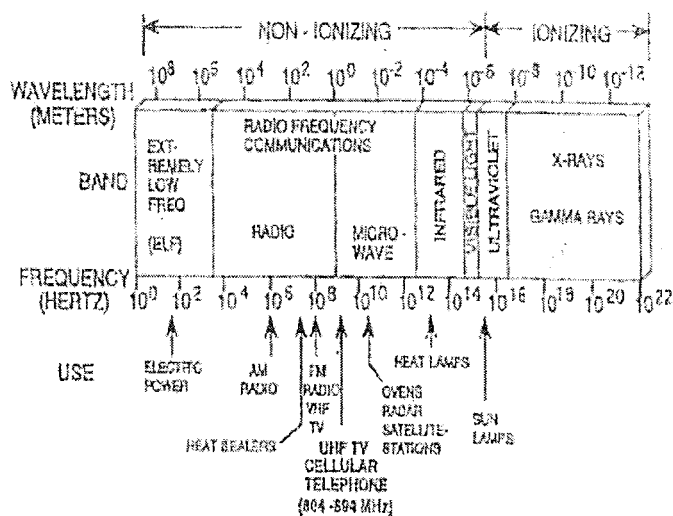


Fig. 1: The electromagnetic spectrum, showing the relation s between ELF and RF fields, wavelength and frequency, and the ionizing and non-ionizing portions of the spectrum

The Federal Communications Commission (FCC) has adopted limits for Maximum Permissible Exposure (MPE) that are based on exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP). The limits vary with

the frequency of the electromagnetic radiation and are expressed in units of microwatts per centimeter squared. A SmartMeter contains two antennas whose combined time-averaged public safety limit of exposure is $655\mu\text{W}/\text{cm}^2$ (Sage, 2011). According to the California Council on Science and Technology (CCST) Report (2011), within distances of three to ten feet, SmartMeters would not exceed this limit. However, CCST did not account for the frequency of transmissions, reflection factors, banks of SmartMeters firing simultaneously, and distances closer than three feet. There are numerous situations in which the distance between the SmartMeters and humans is less than three feet on an ongoing basis, e.g. a SmartMeter mounted on the external wall to a bedroom with the bed placed adjacent to that mounting next to the internal wall. That distance is estimated to be one foot. The CCST Report also states that SmartMeters will generally transmit data once every four hours, and once the grid is fully functional, may transmit "more frequently." It has been aptly demonstrated by computer modeling and real measurement of existing meters that SmartMeters emit frequencies almost continuously, day and night, seven days a week. Furthermore, it is not possible to program them to not operate at 100% of a duty cycle (continuously) and therefore it should not be possible to state that SmartMeters do not exceed the time-averaged exposure limit. Additionally, exposure is additive and consumers may have already increased their exposures to radiofrequency radiation in the home through the voluntary use of wireless devices such as cell and cordless phones, personal digital assistants (PDAs), routers for internet access, home security systems, wireless baby surveillance (baby monitors) and other emerging devices. It would be impossible to know how close a consumer might be to their limit, making safety a uncertainty with the installation of a mandatory SmartMeter.

This report will focus on the documented health risks of EMF in general, the relevance of that data to SmartMeters exposure, the established guidelines for RF safety to the public at large, and then provide recommendations to ameliorate the risk to the public's health.

Evidence-based Health Risks of EMFs

There is no scientific literature on the health risks of SmartMeters in particular as they are a new technology. However, there is a large body of research on the health risks of EMFs. Much of the data is concentrated on cell phone usage and as SmartMeters occupy the same energy spectrum as cell phones and depending on conditions, can exceed the whole body radiation exposure of cell phones (see Attachment B1, Figure 4). In terms of health risks, the causal factor under study is RF radiation whether it be from cell phones, Wi-Fi routers, cordless phones, or SmartMeters. Therefore all available, peer-reviewed, scientific research data can be extrapolated to apply to SmartMeters, taking into consideration the magnitude and the intensity of the exposure.

Since the mid-1990's the use of cellular and wireless devices has increased exponentially exposing the public to massively increased levels of RF. There is however, debate regarding the health risks posed to the public given these increased levels of radiation. It must be noted that there is little basic science funding for this type of research and it is largely funded by industry. An intriguing divide, noted by Genuis, 2011 is that most

research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures, most research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures research funded by industry and some governments seems to cast doubt on the potential for harm. Elements of the controversy stem from inability to replicate findings consistently in laboratory animal studies. However, analysis of many of the conflicting studies is not valid as the methodology used is not comparable. Despite this controversy, evidence is accumulating on the results of exposure to RF at non-thermal levels including increased permeability of the blood-brain barrier in the head (Eberhardt, 2008), harmful effects on sperm, double strand breaks in DNA which could lead to cancer genesis (Phillips, 2011), stress gene activation indicating an exposure to a toxin (Blank, 2011), and alterations in brain glucose metabolism (Voikow, 2011).

In terms of meta-analyzed epidemiological studies, all case-control epidemiological studies covering >10 years of cell phone use have reported an increased risk of brain tumors from the use of mobile phones (Hallberg, 2011). Other studies have pointed to an increasing risk of acoustic neuroma, salivary gland tumors, and eye cancer after several years of cell phone use and the tumors occur predominantly on the same side of the head as the phone is used. The analysis of brain cancer statistics since the mid 20th century in several countries reveals that brain tumor formation has a long latency time, an average of over 30 years to develop from initial damage (Hallberg, 2011). Therefore using studies such as the Interphone Study which looked at shorter latency periods for the development of specific brain cancers will result in inconclusive data.

Another potential health risk related to EMF exposure, whose legitimacy as a phenomenon remains contentious, is electromagnetic hypersensitivity (EHS). In the 1950's, various centers in Eastern Europe began to describe and treat thousands of workers, generally employed in jobs involving microwave transmission. The afflicted individuals often presented with symptoms such as headaches, weakness, sleep disturbance, emotional instability, dizziness, memory impairment, fatigue, and heart palpitations. Clinical research to verify the physiological nature of this condition did not begin in earnest until the 1990's and found that the EMF involved was usually within the non-ionizing range of the electromagnetic spectrum. In the early 2000's, estimates of the occurrence of EHS began to swell with studies estimating the prevalence of this condition to be about 1.5% of the population of Sweden (Hilleert et al., 2002), 3.2% in California (Levallos et al., 2002), and 8% in Germany (infas Institut für angewandte Sozialwissenschaft GmbH, 2003).

In 2004, WHO declared EHS "a phenomenon where individuals experience adverse health effect while using or being in the vicinity of devices emanating electric, magnetic, or electromagnetic fields (EMFs)...Whatever its cause, EHS is a real and sometimes debilitating problem for the affected persons (Mild et al., 2004)."

Currently, research has demonstrated objective evidence to support the EHS diagnosis, defining pathophysiological mechanisms including immune dysregulation in vitro, with

increased production of selected cytokines and disruption and dysregulation of catecholamine physiology (Genuis, 2011).

Until recently, the diagnosis of EHS has not received much support from the medical community due to lack of objective evidence. In an effort to determine the legitimacy of EHS as a neurological disorder, however, a collection of scientists and physicians recently conducted a double-blinded research study that concluded that "EMF hypersensitivity can occur as a bona fide environmentally-inducible neurological syndrome (McCarty et al., 2011).

Safety Guidelines

The guidelines currently used by the FCC were adopted in 1996, are thermally based, and are believed to protect against injury that may be caused by acute exposures that result in tissue heating or electric shock. FCC guidelines have a much lower certainty of safety than standards. Meeting the current FCC guidelines only assures that one should not have heat damage from SmartMeter exposure. It says nothing about safety from the risk of many chronic diseases that the public is most concerned about such as cancer, miscarriage, birth defects, semen quality, autoimmune diseases, etc. Therefore, when it comes to nonthermal effects of RF, FCC guidelines are irrelevant and cannot be used for any claims of SmartMeter safety unless heat damage is involved (Li, 2011).

There are no current, relevant public safety standards for pulsed RF involving chronic exposure of the public, nor of sensitive populations, nor of people with metal and medical implants that can be affected both by localized heating and by electromagnetic interference (EMI) for medical wireless implanted devices. Many other countries (9) have significantly lower RF/MW exposure standards ranging from 0.001 to 50 $\mu\text{W}/\text{cm}^2$ as compared with the US guideline of 200-1000 $\mu\text{W}/\text{cm}^2$. Note that these recommended levels are considerably lower than the approximately 600 $\mu\text{W}/\text{cm}^2$ (time-averaged) allowed for the RFR from SmartMeters operating in the low 900 MHz band mandated by the FCC based on only thermal consideration.

In summary, there is no scientific data to determine if there is a safe RF exposure level regarding its non-thermal effects. The question for governmental agencies is that given the uncertainty of safety, the evidence of existing and potential harm, should we err on the side of safety and take the precautionary avoidance measures? The two unique features of SmartMeter exposure are: 1) universal exposure thus far because of mandatory installation ensuring that virtually every household is exposed; 2) involuntary exposure whether one has a SmartMeter on their home or not due to the already ubiquitous saturation of installation in Santa Cruz County. Governmental agencies for protecting public health and safety should be much more vigilant towards involuntary environmental exposures because governmental agencies are the only defense against such involuntary exposure. Examples of actions that the public might take to limit exposure to electromagnetic radiation can be found in Attachment B2.

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EXHIBIT E

STUDY SHOWING IMPACTS TO MAMALIAN BRAIN RELATED
TO LEARNING, MEMORY AND ALZHEIMER'S IMPACTED
BY WHOLE EMF EXPOSURE

Greek Researchers Show Crucial Regions of the Brain Related to Learning, Memory, Alzheimer's Impacted by Whole Body EMF Exposure in Animals

25.01.2012 by emily Category [Electromagnetic Health Blog](#)

A Greek scientific study led by Adamantia Fragopoulou and Lukas Margaritis has demonstrated important protein changes in the brain of animals following whole body exposure to RF electromagnetic fields, similar to the kind of microwave radiation emitted from cell phones, portable phones, WiFi and wireless computer equipment. The study, “**Brain proteome response following whole body exposure of mice to mobile phone or wireless DECT base radiation**”, was published in *[Electromagnetic Biology and Medicine](#)*, Early Online: 1–25, 2012 (See Abstract, below).

Important regions of the brain necessary for learning, memory and other functions of the mammalian brain were impacted by the microwave radiation, including the hippocampus, cerebellum and frontal lobe, at exposures below the ICNIRP (*International Commission on Non-Ionizing Radiation Protection*) safety

guidelines. A total of 143 proteins in the brain were impacted by the RF radiation over a period of 8 months, providing new evidence for a potential relationship between everyday cell phone use, wireless transmitters and wireless computer equipment and electrosensitivity symptoms, such as headaches, dizziness and sleep disorders, as well as with tumors, Alzheimer's and even metabolic effects.

The study simulated 3 hours of cell phone exposure over eight months, 8 hours of DECT portable phone exposure over eight months, and included a sham exposure control group. The results showed both down regulation and up regulation of the proteins.

TABLE 1 Number of differentially expressed proteins across three major brain regions, following long-term electromagnetic radiation exposure to conventional mobile phone (M) and DECT wireless base (B).

Proteins	Hippocampus		Frontal lobe		Cerebellum	
	B	M	B	M	B	M
Upregulated	11	37	12	19	8	36
Downregulated	11	33	11	18	10	18
Total number of proteins changed	22	70	23	37	18	54

Several **neural function related proteins** (i.e. Glial Fibrillary Acidic Protein (GFAP), Alpha-synuclein, Glia Maturation Factor beta (GMF), and apolipoprotein E (apoE)), heat shock proteins, and cytoskeletal proteins (i.e. neurofilaments and tropomodulin), were shown to be impacted by the radiation, as well as **proteins of the brain metabolism** (i.e. Aspartate aminotransferase, Glutamate dehydrogenase), in *nearly all of the brain regions studied*.

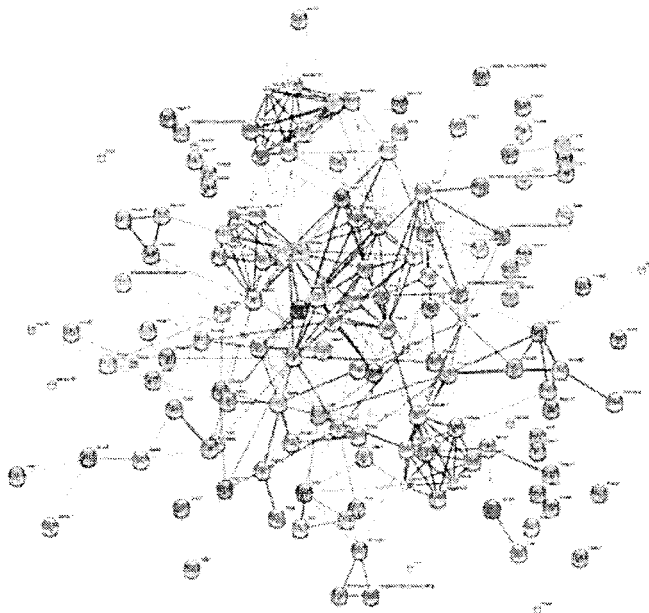


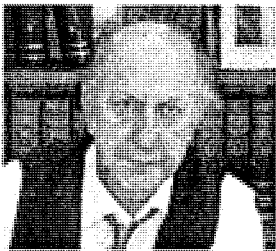
Figure 2 from the study shows the 143 proteins that have changed (up- or down-regulated) and their functional relationship based on a literature survey.



Adamantia F. Fragopoulou, M.Sc., PhD Candidate, in the Dept of Cell Biology and Biophysics at University of Athens, Greece, lead author of the study, says,

“Our study is important because it shows for the first time protein changes in the mouse brain after EMF exposure and in particular in very crucial regions like **hippocampus, cerebellum and frontal lobe**, all **involved in learning, memory and other complicated functions of the mammalian brain**. We have demonstrated that **143 proteins** are altered after electromagnetic radiation, including proteins that have been correlated so far with Alzheimer’s, glioblastoma, stress and metabolism. In its perspective, this study is anticipated to throw light in the understanding of such health effects like headaches, dizziness, sleep disorders, memory disorders, brain tumors, all of them related, to the function of the altered brain proteins.

“Until now there is limited evidence relating EMFs with the impact on specific brain proteins. Further analysis of the affected proteins as well as replicating the experiment under similar conditions (data presently under analysis) is expected to offer new insights explaining the overall effects.”



Lukas H. Margaritis, PhD, Professor Emeritus (as of Sept 2010) of Cell Biology and Radiobiology, Dept of Cell Biology and Biophysics, University of Athens, head of the Athens research group, says,

“A high throughput approach (mass characterization of biomolecules, similar to microarrays that analyze the total genes of an organism) as that of the **Proteomics*** has never been used so far in **EMF research of BRAIN TISSUES** following whole body exposure of model animals (mice) at **SAR values below ICNIRP’s recommendations**. It is also the first time that wireless DECT phones base radiation is involved in lab animal studies and specifically in such molecular effects. The message taken out of this work is that people should be very cautious when using mobile phones next to their body (especially next to their brain), whereas the wireless DECT should be located as far away as possible from places that people use to spend many hours a day, not to mention children of all ages.”

** Proteomics is the study of the structure and function of proteins. Proteins are the primary components of the physiological metabolic pathways of all cells. They influence the functioning of all bodily systems, such as the immune system, endocrine system, neurological system (including cognitive function),*

respiratory system, etc. Malfunction in protein integrity has been linked to hereditary diseases, nervous system disorders, diabetes, to name just a few cases. Proteins are responsible for energy production and information transfer, in fact modern CELL BIOLOGY considers that there is no single cellular function that is not mediated by proteins.

The study by Fragopoulou et al. suggests immediate follow up on these findings are warranted, as changes in molecular effects in the brain can raise questions about what the effects would be on the brain ***after much longer durations*** of exposure to RF radiation, as is common today from frequent cell phone use and wireless exposures, as well as the ***effect of cumulative exposures*** on the brain and mental functioning; immune system defects; fatigue; chronic sleep disorders; and effects on fetuses and sperm quality. The research extends our understanding from the **Volkow et al. study** (*JAMA. 2011;305(8):808-813. doi: 10.1001/jama.2011.186*), which demonstrated impacts of cell phone radiation exposure on brain glucose metabolism, without understanding the mechanisms of action. The Fragopoulou et al. study presents a plausible theory why glucose metabolism in the brain may become altered, possibly through an oxidative stress effect.

Special Concern for Children

Regarding the implications of the Greek findings for the learning capability of children in formative years, the authors say,

“The evidence for dysregulation of proteins in the brain from whole body exposure to RF/MW radiation, such as the radiation emitted by cell phones, portable phones, wireless devices or ambient RF/MW from cell towers, whether proteins are upregulated or downregulated, is of great concern for its impact on children’s capacity to learn. “

When considered together with other studies published by the University of Athens team (Fragopoulou et al. 2010, on **spatial memory disorder**, and Ntzouni et al. 2011 on **recognition memory disorders**, the authors say, “This proteome study implies that mobile phone radiation exposure at a normal intensity (and even below ICNIRP’s guidelines) is capable of detuning **learning/memory functions** and possibly other brain functions important **in person-to-person communication and understanding**. The impacts on society are unpredictable as EMFs are not a drug that is delivered to specific body parts or functions. EMFs can attack through oxidative stress every single cell that receives enough energy at non-thermal levels. The potential consequences for learning, memory and interpersonal relations, at the very least, need society’s immediate attention, given the widespread exposure to microwave radiation across the globe.”

People exposed to microwave radiation from cell phones, wireless networks and citywide Wi-Fi have long complained of cognitive difficulties ranging from attention problems, difficulty focusing, poor memory, visual and hearing disruptions, headaches, dizziness, depression and foggy thinking. The Fragopoulou et al. study deepens scientists’ understanding of the ***mechanisms of action*** of microwave radiation’s effect on the brain, and on mental functioning, due to changes in proteins and in protein functioning .

Dr. Martin Blank, Associate Professor, Department of Physiology and Cellular Biophysics, Columbia University, and Past President of the Bioelectromagnetics Society, says,

“The paper by Goodman and Henderson (1987) showed that short-term (minutes) exposure to EMF will

stimulate protein synthesis, and Fragopoulou et al. now show that this can lead to important changes in brain composition and function. Such changes may account for symptoms like insomnia, nervousness, fatigue, headaches, etc. that people report after exposure to cell phones and other wireless technologies. The biological verdict became obvious when Goodman and Blank (1994) showed that cells react to EMF as potentially harmful by activating the cellular stress response. There is no question that we should limit our exposure to EMF to help protect our brains and all cells in the body.”

Studies Showing RF Effects Below Safety Guidelines

A growing body of research clearly shows health effects from microwave radiation *at non-thermal levels* of exposure, and effects at exposures far lower than international safety guidelines. One review of the literature, by Carlos Sosa, MD of Columbia, South America, found biological effects from non-thermal levels of EMF exposure at exposure levels well below international safety guidelines in several respects:

	Effects at:	Less Than Guidelines
Psychological changes	.03 W/kg	50x Less
Immune System Effects	.015 W/kg	100x Less
Increase Calcium Efflux	.005 W/kg	300x Less
DNA Damages	.0024W/kg	600x Less
Induces Stress Response	.0110 W/kg	1,600x Less
Affects BBB	.0004 W/kg	4,000x Less
Affects Cardia Ca	.00015 W/kg	10,600x Less
Enhances Cell Proliferation	.00002 W/kg	76,000x Less

Source: Carlos Sosa, MD

The UK charity MobileWise recently published *“Mobile phone health risks: the case for action to protect children”* in November 2011, summarizing and listing more than 200 peer-reviewed studies from a range of international research institutions linking mobile phones at non-thermal exposures to serious biological and health consequences.

A Russian team of researchers also has recently released a study published in **Radiation Biology, Radiation Ecology 2011, Volume 51, No.5, p 611-623** showing **significant long-term (4 years) cognitive decline in children** (ages 7-12) in users of mobile devices compared to controls, once again demonstrating exposure guidelines are inadequate. Lead author of the study, Professor Yury Grigoriev, Chairman of Russian National Committee on Non-Ionizing Radiation Protection and a member of the WHO’s International Advisory Committee on “EMF and Health”, says,

“Our recent 4-year monitoring of effects from cell phone radiation on children, published in Radiation Biology, Radiation Ecology (Volume 51, No.5, 2011), demonstrates an increase in phonemic perception disorders, abatement of efficiency, reduced indicators for the arbitrary and semantic memory and increased fatigue. Over the four-year monitoring of 196 children ages 7-12 who were users of mobile communication devices, a steady decline in these parameters from high values to bottom standards compared to controls, was observed. **The short-term and long-term potential consequences for society from exposing children to microwave radiation from cellular communication devices must be immediately acknowledged, globally, and**

responsibly addressed.”

A history of exposure standard setting in the telecommunications industry, The Procrustean Approach , by Don Maisch, PhD of EMF Facts in Australia, describes *‘the manipulation of telecommunications standards by political, military, and industrial vested interests at the expense of public health protection.’*

The Seletun Scientific Statement, a statement by international scientists in February 2011 (watch video), called for reduction EMF exposures globally to reflect the known biological effects at radiation exposures far lower than international guidelines in order to protect the public health and the health of future generations.

The recent Fragopoulou et al. research adds to the body of science demonstrating we are changing and deregulating biological functioning in the brain with the unchecked proliferation of RF electromagnetic fields from telecommunication and utility technologies. These effects are occurring at exposures below safety guidelines and the safety guidelines urgently need to be changed to protect public health.

PRE-FILED DIRECT TESTIMONY
OF [REDACTED]
MPUC Docket No. 2011-00262

1 **Q. Please state your name and address.**

2 A. [REDACTED]

3

4 **Q. Was a CMP smart meter installed at your residence? If so, state**
5 **approximately the date when it was installed.**

6 A. Smart meter was installed on February 1, 2012 at [REDACTED] Rd.

7 **Q. If a smart meter was removed and replaced by an analog meter at your**
8 **request, please describe the circumstances of your request or complaint to**
9 **CMP and their response.**

10 A. [REDACTED]: I requested that the smart meter be replaced with the regular
11 meter because my fiancé started with headaches everyday from April until an
12 emergency surgery to remove a brain tumor (a fast growing glioblastoma tumor).
13 Her chair was three feet from where the smart meter was installed outside. The
14 smart meter was replaced on August 8, 2012.

15 **Q. If you do not currently have a smart meter, are you paying the opt-out fees?**

16 A. [REDACTED]: I was charged \$51.00 to replace the smart meter with the old
17 meter and \$12.00 per month is added to current bills.

18 **Q. Please describe why you do not want a smart meter at your residence.**

19 **Identify any health concerns you may have about smart meters and whether**

1 **these concerns are based upon any specific physical or medical conditions that**
2 **you or any of your family members may have.**

3 A. [REDACTED]: Our health concern is that this could have caused my death (very
4 early). [REDACTED] had headaches constantly for some time also. The glioblastoma
5 tumor I had removed on May 5th was cancerous and chemo meds and radiation
6 treatments last 2 ½ months. One MRI after and clear right now.

7 **Q. Do you experience electromagnetic sensitivity symptoms in proximity to radio**
8 **frequency devices, such as Wi-Fi, microwave ovens, cell phones, cordless**
9 **phones, smart meters or other devices? Please describe the symptoms and**
10 **the circumstances when they occur.**

11 A. As far as we know just the smart meter.

12 **Q. If you have physical or medical conditions, including sensitivity to**
13 **electromagnetic radiation, have these conditions been diagnosed? Identify**
14 **the diagnosis or description of the condition.**

15 A. No real answers as to whether smart meters caused the medical emergency.

16 [REDACTED]: To add I had an MRI at [REDACTED] Hospital in November
17 2010 and results were normal – no tumors and no cancers.

18 **Q. Has your physician or other medical care provider made any**
19 **recommendations about exposure to electromagnetic devices, including smart**
20 **meters?**

21 A. No. I have not had a chance to discuss this with them. Both of us have a family
22 doctor – Dr. [REDACTED], [REDACTED] Healthcare Center. Oncology for [REDACTED]

1 is Dr. [REDACTED], [REDACTED] Hospital. Radiation Oncology – Dr. [REDACTED]
2 [REDACTED] for Cancer Care.

3 **Q. Have you observed any pets exhibiting adverse reactions to smart meter**
4 **transmissions? Describe the circumstances.**

5 A. Our German Shepard did not stay around us in the living room and would constantly
6 wet on the floor.

7 **Q. If you had a smart meter for a period of time and experienced or observed**
8 **symptoms or adverse reactions, did those symptoms or adverse reactions cease**
9 **when the smart meter was removed? Describe the circumstances.**

10 A. Yes. The headaches ended when the smart meter was removed. Tension slowed
11 and we are feeling better.

12 **Q. Has your experience with smart meters caused any disruptions in your daily**
13 **living? Please describe the circumstances?**

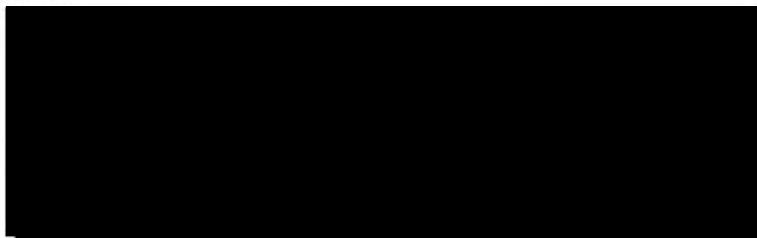
14 A. [REDACTED] had major loss of memory, confusion and headaches. [REDACTED] had major
15 tension and headaches. Daily living was very hard. Starting in October, 2012, I
16 will have an MRI done every three months and was told the tumor could come back.

17 **Q. Please tell us anything else that you want us or the Public Utilities Commission**
18 **to know about your experiences and circumstances.**

19 A. We had an option not to have the smart meter installed and basically thought it
20 would be okay. Unfortunately it was not. We got very behind on bills and had to
21 pay and be broke. We still are, but still have to pay extra on the CMP bill each
22 month. Before traveling to [REDACTED] radiation treatments we had to invest in a used

1 vehicle to travel as the vehicle we had prior could not get a new sticker, so we had to
2 junk it.


Dated this 23rd day of January, 2013.

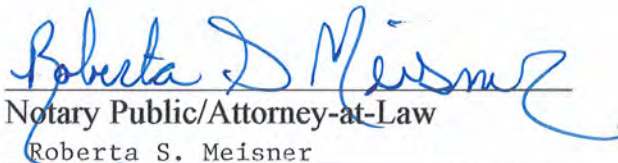


STATE OF MAINE

~~CUMBERLAND~~, ss:
FRANKLIN

January 23, 2013

Personally appeared the above-named , and
stated under oath that the foregoing Affidavit made by them is true and based upon their
own personal knowledge, information or belief, and so far as upon information and belief,
they believe the information to be true. Before me,


Notary Public/Attorney-at-Law
Roberta S. Meisner

Name Typed or Printed

My Commission Expires: 02/24/2019

ROBERTA S. MEISNER
Notary Public, Maine
My Commission Expires February 24, 2019

PRE-FILED DIRECT TESTIMONY
OF [REDACTED]
MPUC Docket No. 2011-00262

1 **Q. Please state your name and address.**

2 A. [REDACTED]

3 **Q. Was a smart meter installed at your residence? If so, state approximately the**
4 **date when it was installed.**

5 A. Yes, in late 2005, Central Hudson installed one for our weekend home in
6 [REDACTED], New York, and in June, 2009, Con Edison installed one on our [REDACTED], New
7 York residence.

8 In 2006, my husband, our two teenage sons, and I began spending weekends and
9 vacations at our new house in [REDACTED]. There was an AMR (automatic meter reading)
10 digital utility meter (DU) on a pole 100 feet from that house, which at the time, had no
11 meaning for me, except that I occasionally saw a truck pull up to take a meter reading.
12 AMR DU meters are an early version of "smart meters."

13 In June 2009, Con Edison installed an AMR electric transmitting digital meter on the
14 outside of my home in [REDACTED] New York. They also installed a
15 transmitting digital gas meter in my basement. The electric meter was labeled as
16 follows:

17 Centron
18 0716701200 CL200 240V 3W Type C1SRP 30TA 1.okh
19 Ca. 0.5 FM 2s 60Hz
20 A72AQ 7978929. 59689 345

21 I did not record the information from the Central Hudson AMR DU meter or from the
22 Con Edison gas DU meter.

23 **Q. Please describe any adverse reactions you have had to the smart meters.**

24 A. From 2006 to 2009, when I was at our home in [REDACTED] I had sporadic and unusual
25 heart palpitations, always at night, which would jolt me out of my sleep. This
26 happened only when I was in [REDACTED]. In 2008, I went to my doctor for a check up and
27 to have my heart tested. He found me in good health with nothing wrong with my
28 heart. At that time, I did not know any information about the pulsing electromagnetic
29 emissions from DU meters and that these meters were causing this type of reaction in
30 other people.

1 For most of the summer of 2009, we traveled back and forth between [REDACTED] and
2 [REDACTED]. I continued to have sporadic heart events.

3 After the summer months, we returned to [REDACTED], where an electric AMR DU meter
4 had been installed in June 2009, and in September 2009 I began noticing the following
5 unusual symptoms: Agitation, Memory and word loss, Inability to concentrate on my
6 work, Nervousness, Unusual menstrual disruption; A mole began to grow larger on my
7 back.

8 At 51, I wondered if I was developing an early form of Alzheimer's disease. I was not
9 well, which at the time I described as feeling "unhinged," and I again went to my
10 doctor but he did not know what was wrong with me.

11 In February 2010, during a major snowstorm in [REDACTED], I was in my living room,
12 next to my fireplace, about five feet away from the electric AMR transmitting meter,
13 outside my living room window. My husband was traveling and my sons were not at
14 home. The electricity went on and off several times during that storm. Suddenly
15 during one of these electrical events, I heard a very high pitched piercing sound in my
16 right ear and I experienced painful pressure in both of my ears. This caused me to
17 double over in pain.

18 Along with the symptoms I had been experiencing previously, as noted above, I began
19 to develop worse symptoms: Severe heart palpitations; A loud and very disturbing
20 buzzing-pulsing sound especially in my right ear; Extreme agitation; Interrupted sleep
21 with nightmares of being attacked; Waking with severe heart palpitations; The mole on
22 my back began to blow up and grow larger; Pains in my jaw and teeth.

23 I became terrified that I was going to die of a heart attack. I began to sleep on my
24 kitchen floor so that the sound of the refrigerator would drown out the terrible buzzing
25 in my ears. When I left [REDACTED] for [REDACTED], I had the same symptoms there. Some
26 of the symptoms would lessen when I went outside, so I began to suspect that
27 something was wrong inside, perhaps with the electricity.

28 After a conversation with an electrical specialist, I began to suspect that my symptoms
29 might be traceable to the AMR DU meters that Central Hudson and Con Edison had
30 installed. The DU meters were in fact the only newly introduced electrical and
31 technical appliances in our homes.

32 Q. Did you have the smart meters removed? If so, please describe the
33 circumstances of your request or complaint to the utility companies and their
34 response.

35 A. In February 2010, after I became suspicious that the Radiofrequency/Microwave
36 (RF/MW) radiation emissions from the AMR DU meters were making me sick, I

1 requested both Central Hudson and Con Edison to remove all AMR DU meters from
2 both of my homes.

3 Central Hudson replaced the electric AMR DU meter with an analog meter.

4 Con Edison required me to get a letter from my doctor, which shocked me. I
5 wondered how my personal medical information was the business of a utility
6 company. Con Edison removed the gas AMR DU meter, but instead of replacing the
7 electric AMR DU meter with an analog meter, they installed another electric DU
8 meter, which they told me was not an AMR meter and had NO antenna or RF/MW
9 radiation. They said that I would need to provide them, in the future, with meter
10 readings. They also told me that I would be hearing from their health division, which
11 I never did. Because at that time I was uneducated about both electromagnetic
12 radiation and various meter types, I was grateful that Con Edison made the switch and
13 I was hopeful that this new DU meter would have no effects on my health.

14 I recorded the following information from the second DU meter that Con Edison
15 installed on my home.

16 Schlumberger Centron
17 CL200 120V 3W Type CN15
18 30TA 1.okh
19 Ca. 0.5 FM 25S 60Hz
20 HF5006914736AAV*
21 71BQ 6914736
22 25 440 021

23 My symptoms became worse after the second DU meter was installed. I then pleaded
24 with Con Edison to remove the second DU meter and I told them that "I might die" if
25 they did not. Con Edison removed the second and final DU meter from my home on
26 March 12, 2010, and replaced it with an analog meter.

27 **Q. Please explain why you wanted the smart meters removed.**

28 **A.** The only possible explanation for the change in my health was that new transmitting
29 meters with unbearable and unrelenting radiofrequency radiation emissions had been
30 installed in and on our home in [REDACTED] and in [REDACTED]

31 During the time that the AMR DU meters were on our homes, my husband developed
32 high blood pressure and had to be placed on blood pressure medication. My family
33 was unusually agitated during this time.

34 I have learned that other people in [REDACTED] also became ill after AMR DU meters were
35 installed on their homes. None of them has been able to get the utility companies to
36 remove the AMR meters despite vigorous requests for the utilities to do this. The

1 utilities claim the meters are safe and are flatly refusing to remove any meters, even
2 when a letter from a doctor has been supplied asking for their removal.

3 When I asked the "Meter Relations" department (212-460-4111) at Con Edison if I
4 could see a copy of the test results for human exposure to the
5 radiofrequency/microwave (RF/MW) radiation from the meters, I was told that I must
6 obtain a subpoena to acquire that information.

7 AMR electric meters are not Underwriter's Laboratory Approved, which means that
8 state and federal agencies approved the meters but did not test them for health and
9 safety and that is why Con Edison refused to answer my question. To the best of my
10 knowledge no transmitting digital utility meters AMR or "smart" were tested for health
11 and safety, yet the meters emit and transmit levels of RF/MW radiation, designated a
12 Class 2B Carcinogen by the World Health organization.

13 **Q. Did your symptoms or adverse reactions cease when the smart meters were**
14 **removed?**

15 **A.** Yes. In the hours following Con Edison's final removal of the last DU meter from my
16 home my symptoms became less extreme. Specifically, on March 4, 2010, when Con
17 Edison replaced the first AMR DU meter with another DU meter, my symptoms
18 continued to worsen. My heart felt as if it was flipping in my chest. I was in a
19 terrified state, unable to sleep and truly frightened that I would have a heart attack.
20 After making many more calls to Con Edison, on March 12, 2010, Con Edison
21 workers, including a manager of the meter department, came and removed the second
22 electric DU meter from my house and finally replaced it with an analog meter.

23 My immediate responses to the removal of the DU meter were so remarkable that I
24 recorded them.

25 I felt as if I were being released from being electrocuted; I felt weighted down with
26 exhaustion; the buzzing-pulsing became quieter; I felt tingling in arms.
27 Within hours I began feeling slightly better. The loud buzzing-pulsing did not go
28 away but inside my house it got noticeably quieter. My thoughts became less
29 scrambled.

30
31 Within weeks: The mole on my back bled, dried up and fell off (documented by my
32 dermatologist); I began to menstruate again, but never again normally as was the case
33 before the meter was installed.

34 **Q. Are you paying opt-out fees?**

35 **A.** I have not been asked to pay opt-out fees by Central Hudson or Con Edison. I am,
36 however, one of the only homeowners for whom both of these utility companies have
37 removed the DU meters. As of today, both utility companies are refusing to remove

1 any DU meters, including for homeowners who have provided medical letters to the
2 utilities.

3 Q. Do you or any of your family members experience electromagnetic sensitivity
4 symptoms in proximity to radio frequency devices, such as Wi-Fi, microwave
5 ovens, cell phones, cordless phones, other devices?

6 A. We had Wi-Fi, DECT portable phones, cell phones and fluorescent light bulbs for
7 many years and to my knowledge they had never bothered me. Since this happened to
8 me, I have physical symptoms, which at times are unbearable, when I am exposed to
9 these devices.

10 My husband, two sons and I had lived in our homes with wireless internet, DECT
11 phones and cell phones for many years. Our lives have been drastically altered since
12 this happened to me. We have spent close to \$40,000 in electrical and medical bills
13 since 2010, so that I can remain at home. Since being injured by the RF/MW
14 radiation emissions from the DU meters, I am no longer able to physically tolerate
15 wireless equipment.

16 The symptoms I have when I am in direct contact with some wireless equipment and
17 some electrical equipment are: Splitting pain and pressure in my head and ears; My
18 throat closes up; Loss of sleep; Loss of concentration; Ringing in my ears; Heart
19 racing.

20 Since the DU meters, both my husband and my younger son have experienced periodic
21 but mild reactions when near a cell tower. My son has experienced electrical
22 sensations in his ears while going through his college library security system. My
23 older son, who was attending [REDACTED] College in [REDACTED] the entire time the DU meters
24 were on our home in [REDACTED] has not experienced physical symptoms when near
25 wireless devices.

26 Q. Do you experience symptoms when you are near other smart meters?

27 I develop symptoms of tinnitus, heart racing and a pain in my head when I am as near
28 as one foot and as far as 15 feet away from an AMR or smart DU meter, when it
29 transmits or emits signals. I develop symptoms when I visit homes and buildings with
30 AMR DU meters. I can no longer spend time at friend's homes, which have the
31 meters. I feel symptoms outside in my neighborhood because there are meters
32 everywhere. Using an HF35C Electrosnog Analyser, I can read a constant stream of
33 varying levels of RF/MW signals from the meters. DU meters have a very distinct
34 radiation ping sound. Contrary to what Con Edison has stated to me in writing, the
35 particular electric DU meters used by Con Edison can send RF/MW signals once every
36 one to two seconds and up to 30 seconds apart.

1 This "signal hopping" technology is a non-stop, 24/7, RF/MW exposure which
2 surrounds people inside their homes and neighborhoods, with a pulsing/pinging
3 RF/MW signal similar to that of a human heart. I no longer have an AMR meter on
4 my home, but the RF/MW radiation continues to ping in my home through the
5 electrical wiring from the AMR DU meters in my neighborhood.

6 **Q. Has your physician or other medical care provider made any recommendations**
7 **about exposure to electromagnetic devices, including smart meters?**

8 A. I have seen several doctors and medical professionals about this problem since 2010
9 and I have had my heart checked. My primary doctor, a homeopath M.D., has been
10 very helpful for me.

11 My doctor has recommended that I should not have any DU meters of any type at my
12 homes. He provided me with letters for both Con Edison and United Water stating
13 that, because of my extreme sensitivity to electromagnetic radiation, I must not have
14 any RF/MW emitting devices on my home. It is obvious from what has happened to
15 me in the last two and a half years that when I am exposed to wireless and some
16 electromagnetic radiation, I become ill. I am much healthier when I am not exposed
17 to any wireless equipment.

18 Within a year of this happening to me and because of the strange and painful symptoms
19 I was experiencing in my jaw and teeth, I sought out special dentists, one to remove a
20 nickel post in a root canal in my upper jaw and the other to remove all of the metal
21 dentistry, including mercury, cadmium, nickel and silver from my mouth. Although
22 these sound like extreme measures, my research led me to believe that these
23 procedures might relieve me of symptoms caused by electromagnetic radiation
24 conducting through the metal in my mouth. This proved to be very helpful for me.

25 **Q. Has your experience with smart meters caused any disruptions in your daily**
26 **living?**

27 A. My life has been dramatically changed since this whole nightmare started. In 2008, I
28 was a fully functioning, working [REDACTED] and [REDACTED]. During that year I illustrated the
29 book, [REDACTED]
30 published by Rutgers University Press.

31 I have never yet returned to the level of work I was doing before I was injured by the
32 radiation emissions from the DU meters. Wireless equipment and some electrical
33 equipment make me feel sick. I can no longer use a cell phone, other than in an
34 emergency. I can no longer use wireless Internet or be in a home or building for a
35 long period of time, which uses Wi-Fi. I can no longer be near a person using a cell
36 phone. I can no longer be near cell phone antennas, which means I can no longer go to
37 our local farmer's market because of its close proximity to cell transmitters. I used to
38 work in an artists studio with other artists, but I can no longer do that and I am now

1 very isolated. Traveling has become very difficult for me because Wi-Fi affects my
2 sleep.

3 I can no longer attend village board meetings in [REDACTED] because of the cell
4 transmitters on the roof. My life has changed very much. I consider myself very
5 lucky that I have not lost my life, my family and my friends. I wish this had never
6 happened to me.

7 **Q. Please tell us anything else that you want us or the Public Utilities Commission to**
8 **know about your experiences and circumstances.**

9 **A.** I am living proof that DU meters, "radio on" or "radio off," make some people very
10 sick. As my family and friends would attest to, I was perfectly happy using wireless
11 technology and healthy in general before I was over-exposed to the extreme
12 electromagnetic radiation from the DU meters.

13 Somewhere between the design and the manufacturing of all DU meters, something
14 went terribly wrong and the radiation emissions from these flawed meters is far beyond
15 what the utilities might have realized. Utility companies across the U.S. now know
16 that some of their customers are becoming ill from this technology, yet they are
17 holding on to this dangerous mistake because they invested billions of dollars into it.

18 The contamination of the electrical wiring from the meters must be investigated.

19 These are some of the questions that the utility companies must be required to answer
20 and submit actual proof of their answers.

21 Were the meters tested for health and safety?

22 If so what was the testing method?

23 What are the levels and frequencies of RF/MW radiation that are being conducted on
24 home and building electrical wiring?

25 What was the method of testing the RF/MW emissions?

26 What are the precise levels and frequencies of the RF emissions from the meters?

27 Were the meters tested in isolation?

28 Were the meters tested in combination with wireless electrical equipment such as
29 Wi-Fi and DECT phones?

30 In a real life situation there might be electrical circuits in a home or building with
31 faulty wiring, which could cause very high electromagnetic fields. Were the meters
32 tested when attached to a home with faulty electrical wiring?

33 What happens when the conducted and pulsing RF/MW radiation from a "smart" meter
34 contaminates wiring, which already has dangerous and high electromagnetic fields
35 because of faulty wiring?

36 As far as I know there was never proper testing to determine the outcome of attaching

1 this flawed and dangerous technology to an entire home electrical system. We know
2 for a fact that the particular AMR DU meters used in my area of New York were never
3 properly tested. The fact is utility companies and state public service commissions
4 jumped on this ill-conceived project without ever requiring proper testing for health
5 and safety. When I asked Con Edison for the health and safety testing on the meters,
6 they told me that I would need a subpoena for that and that I should contact the FCC.

7 The FCC has made it very clear to me that they are not in the health business but only
8 the frequency business. We should not need to fight to be safe in our homes, safe
9 from utility companies that are trying to bully their customers because of a \$10 billion
10 mistake.

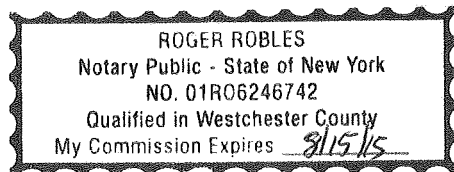
11 AMR and "smart" meters are flawed and dangerous technology. They must be
12 recalled.

Dated this 18 day of January, 2013.

STATE OF NEW YORK
WESTCHESTER, ss:

January 18, 2013

Personally appeared the above-named [REDACTED], and stated under oath that the foregoing Affidavit made by her is true and based upon her own personal knowledge, information or belief, and so far as upon information and belief, she believes the information to be true. Before me,




Notary Public/Attorney-at-Law

Name Typed or Printed

My Commission Expires:

08/15/15