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To the honorable members hearing the Smart Meter discussion:

As a health care provider, boarded in Family Medicine with a special interest in environmental medicine, I have become increasingly alarmed over the numbers of patients coming to me with Idiopathic Environmental Intolerance (Electromagnetic field attributed symptoms), or IEI-EMF symptoms. I am treating one to three new cases a week since SDG&E began to install the Smart Meters.

**The symptoms most often reported to health care providers and noted on health care questionnaires by such organizations as the CDC and World Health Organization include the following:**

fatigue, concentration difficulties, sleep disturbances, weariness, crankiness, obliviousness, headache, "gone" feeling, vertigo, increased heart rate, depressed mood, pressure in head, exhaustion, mood changes, pain in extremities, increased sensitivity to noise, equilibrium disturbances, increased sweating, twitching of the eyelids, impaired vision, conditions of fear, anxiety, itching, feeling of warmth inside head, faintness, increased sensitivity to medications and chemicals, nausea, loss of appetite, skin irritations, vomiting... (appearing in decreasing order of frequency of reporting).

Dr Sears in her report to the Canadian Government made mention of the genetic variations (single nucleotide polymorphisms) in these individuals that contribute to the development of the symptoms and the mechanism of actions of the physiological responses experienced.

"People may be genetically pre-disposed to sensitivities. As a result of genetic polymorphisms, some bodies have less effective enzymes for detoxifying chemicals and metabolizing drugs. This is more prevalent in patients with multiple chemical sensitivity and in Gulf War veterans who became ill. Interestingly, these genes are also more common in children who developed leukemia (the very young are particularly susceptible because the immature liver has low enzyme levels). In multiple chemical sensitivity patients, a higher prevalence of a gene that has been associated with a biochemical basis for panic disorder has been found.

This review indicates that physical factors contribute to environmental sensitivities. There remain many unanswered questions regarding sensitivities and the interplay between biochemical, neurological and psychological processes. It is important for society to come to a common understanding, in order to offer the most efficient, effective care to people with environmental sensitivities." (Attachment #1)

I run the Genovations Detoxigenomics profile on my patients, and have enclosed a sample of the defects (snp's) to show you the pathway weaknesses that the clients have in common as discussed in the Sears report.

Authors Cindy Sage and David Carpenter began their report of the harmful effects of our wireless technology with this paragraph--

“Exposure to electromagnetic fields (EMF) has been linked to a variety of adverse health outcomes that may have significant public health consequences. The most serious health endpoints that have been reported to be associated with extremely low frequency (ELF) and/or RF include childhood and adult leukemia, childhood and adult brain tumors, and increased risk of the neurodegenerative diseases, Alzheimer’s and amyotrophic lateral sclerosis (ALS). In addition, there are reports of increased risk of breast cancer in both men and women, genotoxic effects (DNA damage and micronucleation), pathological leakage of the blood–brain barrier, altered immune function including increased allergic and inflammatory responses, miscarriage and some cardiovascular effects. Insomnia (sleep disruption) is reported in studies of people living in very low-intensity RF environments with WI-FI and cell tower-level exposures. Short-term effects on cognition, memory and learning, behavior, reaction time, attention and concentration, and altered brainwave activity (altered EEG) are also reported in the scientific literature. Biophysical mechanisms that may account for such effects can be found in various articles and reviews.” (Attachment #2)

The physiologically induced pathology mentioned by Sage and Carpenter are only a few of the affects that have been reported in the scientific literature. The *Bio Initiative Report* has a nearly complete listing of the conditions as of 2007, but many more have been confirmed since then.

Dr Havas made one of the most easily understood presentations on the potential hazards of the harmful radiofrequencies. In her report to the San Francisco City Council in May of 2007, she points out many pertinent points that the California Public Utilities should take into consideration and stop the unsupervised installation of “Smart Meters” on the homes and apartments of California citizens:

“The Federal Communications Commission (FCC) Guideline is similar to the international guideline ICNIRP guideline and is based on short-term thermal effects. This guideline is based on the assumption that if microwave energy does not heat tissue it is not harmful. **This assumption is incorrect.** Adverse biological effects have been documented at levels below federal guidelines and there are no federal guidelines for **non-thermal effects**, nor are there guidelines for **long-term exposure**. The technological developments and uses of wireless devices are running well ahead of the policy decisions necessary to ensure their safety.”

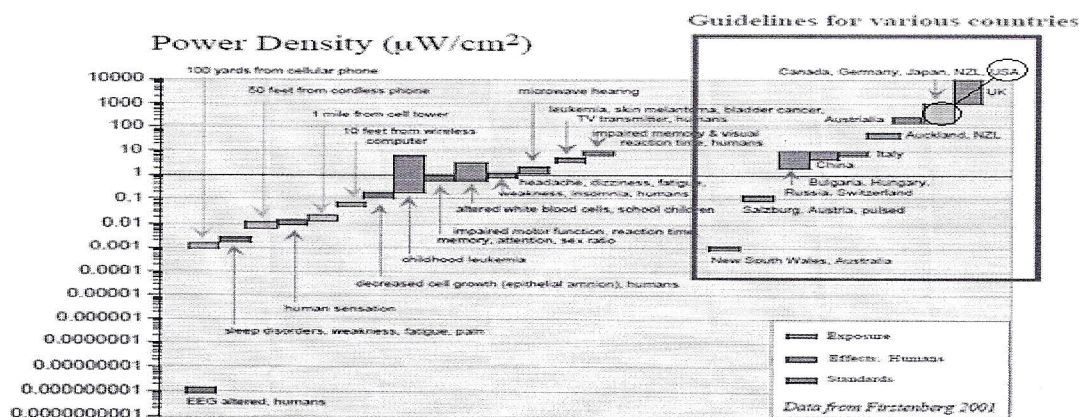


Figure 1. Guidelines, exposures and effects of radio frequency radiation at various power densities. Data from Firstenberg (6).



As shown in the above graph from the Havas report in Figure 1, the guidelines established by the US and many industrialized nations known to be “industrial friendly” are too high to ensure the safety of the citizens of their countries. **Since California has been a leader among states in Building Standards, Car Emissions, removal of toxic chemicals such as BisPhenol A (BPA), and other safety measures, I am confident that the State of California Public Utility Board will strive to limit levels of radiation broadcast into the homes of the citizens of California.**

Dr Havas went on to show a Spanish study regarding the symptoms created by exposure to the EMFs of Cell Phone Towers: (Attachment #3)

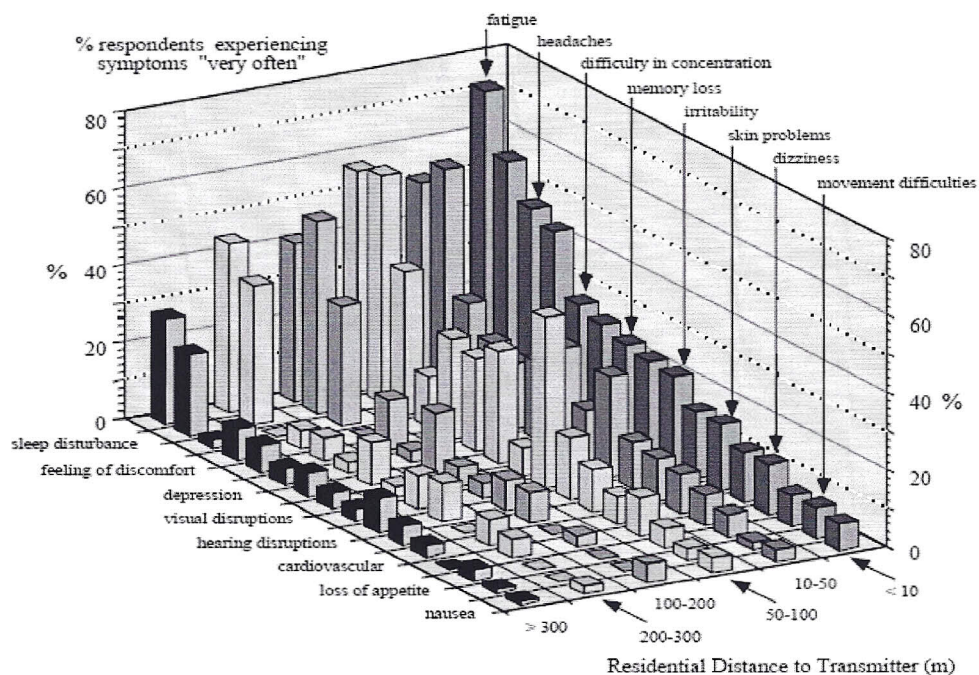


Figure 2. Response of residents living in the vicinity of a cellular phone base station in Spain (27).

Symptoms of EHS include: cognitive dysfunction (memory, concentration, problem-solving); balance, dizziness & vertigo; facial flushing, skin rash; chest pressure, rapid heart rate; depression, anxiety, irritability, frustration, temper; fatigue, poor sleep; body aches, headaches; ringing in the ear (tinnitus) and are consistent with chronic fatigue and fibromyalgia.

By the end of 2011, San Diego Gas and Electric will have deployed over 2.4 million meters if their website is correct. That is 2.4 million homes being irradiated with wi-fi frequencies continuously throughout the day with intermittent surges of radiation. According to the Dr Sears report and the work of Dr Johansson of Sweden, **3% of the population will be severely adversely affected by even these “low doses”, and 16% (Sears) to 35% (Johansson) will have moderate adverse affects or symptoms** from this exposure of the emissions of the wi-fi, such as the “Smart Meters”. (Attachment #4)

Remember, these “Smart Meters” are on 24 hours a day, not like a phone put to the head to talk, or using a wireless computer to do homework and then closed down. Besides, most of my patients are so sensitive, they have to beg their neighbors (whose units broadcast all over the neighborhood) to turn their computer routers off so they can sleep (documented interference with the delta waves and melatonin suppression by wi-fi emissions on the human brain). They do not use cordless or cell phones, wireless computers, LED screens, fluorescent lighting, or other EMF generating devices due to the adverse effects on their health.

SDG&E will tell you the meters only beam a short, intense burst for milliseconds every 30 to 60 minutes to the mother board, but this is inaccurate and deceiving since the meter talks to the “smart” energy efficient appliances in the home every seven seconds to regulate the amount of energy consumption. They will also tell you that there will be no increase in the electrical costs, but this is incorrect since the meter reads the time of use constantly and puts any use from 10 a.m. to 6 p.m. at the highest usage rate, often doubling or tripling the monthly bill as you have seen in the complaints to the State PUC. The energy is not constant, like a cordless phone or wi-fi baby monitor, but pulsed in bursts, which has been shown since the 1970’s to be much more dangerous to human health than a continuous flow of energy.

I have recently learned of a study by Dr Deitrich Klinghardt in 2007 in Seattle, where he took ten of his autistic patients and ten healthy children and asked permission to measure the non-ionizing radiation in the bedrooms where the mothers slept during their pregnancies. The results showed that mothers of the autistic children slept in bedrooms with 150 times the perverse energy fields than mothers of neurologically intact children. He strongly believes that the wi-fi energy of Smart Meters and other equipment generating such radiation interrupts the neurological development of the fetus in the womb and is one of the strongest factors in the significant rise of autism in developing nations.

With the proclamations of the countries Germany and Spain strongly urging pregnant women and children to not use cell phones and wireless devices due to their concern over the mounting scientific evidence of the neurological damage done to the brains of children, why do we put more electro-smog into the airways of our citizens with an autism rate of 1 in 89 in the USA last year? San Diego is now the second worst city in the US for electrosmog, only behind Washington DC, and we are adding more with the Smart Meters—water, electric, and gas—three meters to each home or apartment unit, and each unit receiving the perverse energy from the mother board and hundreds of units in their neighborhood, all beaming unwanted and unhealthy radiation into their private dwelling.

With the scientific studies showing the increase in obesity and diabetes with exposure to ELF EMFs (extra low frequency—such as radio wi-fi waves), why do we want to contribute to the epidemic that is now at 40% of the population having a grossly elevated BMI (body mass index). Newer studies have found diabetes type 3 (gestational diabetes) on the rise with the pregnant women exposed to ELF radiation. Another study shows that osteopenia can be attributed to this radiation, also. I have medical articles on Alzheimers, multiple sclerosis, arthritis, obesity, diabetes, and other chronic diseases that are caused or aggravated by the oxidative damage of the radio waves that these “Smart Meters” induce in the cell wall membranes of human tissues.



I am therefore asking that the State of California issue a cease and desist order on the installation of the Smart Meters at this time until the safety can be determined by something other than the "heat" produced by the radiofrequencies. If such an order cannot comply with the federally mandated "get out of jail free and kill people if you want" Telecommunication Act of 1996 card, then I suggest that smart meter free zones be established to protect these disabled or concerned citizens. Cabled reading devices are available that do not emit radiation, still allowing distant meter reading.

I also would ask that any meters that have been installed on homes or apartments that are occupied by individuals that are currently IEI-EMF sensitive, or that do not wish to have such radiation exposure to their family, be allowed to have the Smart Meter units removed, or some type of protective shielding be installed between the meter and the home at no charge to the occupant.

This is in compliance with the Americans Disability Act of 1990 and 2008 that recognizes "invisible disabilities", and requires modifications of work places and communities as such.

Please see attached articles that I have made reference to. I can also produce a CD of some of the thousands of abstracts and articles I have researched finding credible evidence of the Telecommunications Industry using American citizens as part of a huge biological experiment that will one day find Cell Phones and wi-fi generating equipment, such as the Smart Meters, to be as dangerous as cigarette smoke, asbestos, or leaded gasoline. There are many articles out there that do not show any harm, mostly funded by government and industry, but the great majority of independent studies published in scientific and medical journals do show various adverse physiological responses that concern me greatly. The WHO report that just came out May 31, 2011 now lists the non-ionizing radiation of cell phone use as a Class 2B carcinogen, and wi-fi radiation has similar toxic effects on the cellular physiology of humans and animals.

July 14, 2011

UPTON SINCLAIR ONCE SAID: "IT IS DIFFICULT TO GET A MAN TO UNDERSTAND SOMETHING WHEN HIS SALARY DEPENDS UPON HIS NOT UNDERSTANDING IT".

I AM GLAD THAT IT IS THE CITIZENS OF CALIFORNIA THAT YOU ARE WORKING FOR!

THANK YOU FOR TAKING TIME TO READ THIS LETTER AND REVIEW THE DOCUMENTS ATTACHED. PLEASE FEEL FREE TO CONTACT ME IF YOU HAVE FURTHER QUESTIONS.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dan O. Harper". The signature is written in dark ink and is positioned above the printed name.

Dan O. Harper, MD



## Havas Submission to CCST “Report on Smart Meters”.

For those interested, below is my invited submission to CCST as part of a *Technical Response Team*.

**Date:** October 12, 2010  
**From:** Magda Havas, BSc, PhD  
**To:** CCST

Submission on Smart Meters.

Item 1. Whether FCC standards for Smart Meters are sufficiently protective of public health taking into account current exposure levels to radiofrequency and electromagnetic fields.

In my opinion, the FCC standard for Smart Meters is **not** sufficient to protect public health. This is based on the following facts:

- 1.1 Thermal vs. Non-thermal Debate.** The thermal vs. non-thermal debate is largely a red herring that has been perpetuated for decades and has influenced the type of research done in the United States. The FCC standard is based on a **thermal** effect. It was originally based on the amount of radiation that would heat an adult male in the US military exposed to radar. While the heating effect is not disputed, biological effects, some of which have adverse health consequences, occur well below the thermal guideline (Inglis 1970). As a consequence various countries in the world are opting for a “**biologically**” based guideline rather than a “**thermal**” guideline, which takes into account not only adult males in peak physical conditions but children, pregnant women, the elderly, and those who have developed electrohypersensitivity (EHS). I will return to the concept of EHS later.
- 1.2 Guidelines** in Russia, Switzerland, Poland, and China are well below the FCC standard (i.e. 10 vs. 1000 microW/cm<sup>2</sup> or 1% of FCC guidelines). Some military and government insiders tried to get U.S. guidelines reduced decades ago but were not successful (Pollack and Healer 1967, Dodge 1969). Steneck et al. (1980) provides an excellent account of how the U.S. standards were established for radio frequency radiation.
- 1.3 Our exposure to radio frequency radiation (RFR) is increasing exponentially** as we design more equipment that relies on higher frequencies in the electromagnetic spectrum. Prior to World War II, this type of radiation was negligible. Today we have radar (military, marine, aviation, and weather), we have cell phone antennas, radio and TV broadcast antennas, and a growing number of WiFi hotspots, citywide WiFi and Wi-Max antennas. Inside buildings we have cordless phones, many of which emit microwave radiation even when they are not being used; wireless alarm systems; wireless baby monitors, wireless computers, iPads, and Smart Phones that can connect to wireless internet or WiFi. More children are playing wireless video games than ever before and radio frequency identification devices (RFID) are placed into

merchandise to provide information to the manufacturer about consumer habits. The “smart meter” is just another source of exposure that will be placed on every home and in every apartment. Smart meters are being used to monitor use of electricity, gas and water. As part of this system, appliances are being designed to communicate directly with smart meters, all in a wireless mode, which will ultimately increase levels of radiation in the home.

- 1.4 I work with people who have become **electrically hypersensitive (EHS)** and I have received emails and phone calls from those who have had smart meters placed on their homes. They complain of ill health and many are unable to use the room closest to the smart meter. These individuals have no place to “hide” from the growing levels of electrosmog especially in densely populated urban centers. Sickness contributes to time off work and away from school, growing medical costs and a general poorer quality of life. Children are particularly vulnerable as are pregnant women and those with compromised immune systems. The presence of metal implants in the body (such as metal pins in bones) may concentrate the absorption of radiation at the location of implantation, inducing thermal effects from lower power densities than would ordinarily cause such harm (Massey 1979). Some implants, such as pace makers and deep brain stimulators for Parkinson’s disease, may malfunction and this can be fatal. In Switzerland about 5% of the population has EHS. If the same fraction of the population has EHS in the US that would come to a staggering 15 million people!

The symptoms following exposure to radio frequency radiation were labeled radiowave sickness and were first reported for those occupationally exposed in the former Soviet Union. These same symptoms are now referred to as electrohypersensitivity (EHS) and are experienced by a growing fraction of the population. They include . . .

*“ . . . headache, eyestrain and tearing, fatigue and weakness, vertigo, sleeplessness at night and drowsiness during the day, moodiness, irritability, hypochondria, paranoia, either nervous tension or mental depression and memory impairment. After longer periods of exposure, additional complaints may include sluggishness, inability to make decisions, loss of hair, pain in muscles and in the heart region, breathlessness, sexual problems and even a decrease in lactation in nursing mothers. Clinically observed effects in persons voicing these complaints include trembling of the eyelids, fingers and tongue, increased perspiration of the extremities, [and] rashes . . .”* (Massey, 1979).

- 1.5 In addition to sensitive people, Switzerland also identifies ***Places of Sensitive Use*** (German acronym is OMEN). These places include: living rooms; classrooms and kindergartens; hospitals and nursing homes; permanent jobs (where people spend more than 2.5 days per week); and playgrounds. For these OMEN sites, the Swiss government recommends that greater precaution be taken for long-term exposure to weak radiation. In these places, radiation from wireless microwave base stations (such as cordless phones or WLAN/WiFi) may exceed radiation from nearby cell phone base stations and hence these devices must generate emissions as low as possible. For more information visit <http://www.bag.admin.ch/themen/strahlung/00053/index.html?lang=en>



Item 2. Whether additional technology specific standards are needed for Smart Meters and other devices that are commonly found in and around homes, to ensure adequate protection from adverse health effects.

- 2.1 Technology specific standards are definitely needed** for Smart meters as well as cordless phones, DECT baby monitors, wireless routers, and all of the other devices that emit radio frequency radiation.

Massey, in a report published by Duke Law Journal in 1979, identifies nine variables that need to be considered when determining the impact of microwave radiation. These are “power density, intensity and relative phase of all field components, specific frequency ranges, waveform characteristics, exposure regimes, specific occupations, level of control over exposed populations, individual differences (age, sex, health, specific predisposing factors) and presence of other environmental stressors.” The current FCC guidelines do NOT take these into consideration.

- 2.2** We have evidence that **pulsed microwave frequencies**, that are generated by WiFi and cordless phones are more harmful than continuous wave and yet this is not considered in the FCC guidelines (Reno 1975).

The key microwave emitting devices in the home/office/school environment are:

Cordless phones (some are labeled DECT and others pulsed digital 2.4 GHz). These radiate all the time even when no one is using them. They should be replaced by wired phones or cordless phones currently available in Europe, which are “on-demand” phones that radiate only when the handset is not in the cradle of the base station. These phones are so dangerous that I recently submitted a Petition to the Auditor General of Canada to have DECT phones banned (Havas 2008).

The DECT baby monitor also radiates all the time, as does the receiver that is often carried on the Mother’s waist. Here we need a voice-activated baby monitor that is used in Europe.

Wireless Internet (WiFi or WLAN) is not as common in Europe as they are in North America. There they prefer using wired service in the form of fiber optic and Ethernet connections. Germany hotels ask that you bring an Ethernet cables with you, as they don’t provide WiFi. The Swiss government is providing free fiber optics to schools provided they don’t install wireless routers.

- 2.3** An additional point I would like to make relates to **dirty electricity**.

Wires can act like antennas and the radiation produced by radio frequency generating devices can flow along and reradiate from wires both inside and outside the home. This contributes to dirty electricity and localized radiation exposure. Dirty electricity has been associated with cancers (Milham and Morgan 2008); health and behavior problems in schools (Havas and Olstad 2008); and both diabetes and multiple sclerosis (Havas 2006). From a human health perspective and to protect sensitive electronic equipment it is

important to maintain good power quality and to prevent radiation from smart meters flowing along wires.

In conclusion, I have great concern regarding the **current levels of microwave radiation** in North America. Instead of promoting wireless technology, we should be promoting wired technology and reserving wireless for situations where wired is not possible (while one is traveling for example). Shortly after X-rays were discovered, they were used in shoe stores to determine shoe-size for young children. Fortunately, we recognized that X-rays were harmful and we restricted their use to essential medical diagnoses. We need to recognize that microwaves are also harmful and we cannot use this technology in a frivolous manner. With more frequencies being used, with the levels of radiation increasing, and with so little research on the long-term, low-level effects of this technology we are creating a potential time bomb. If smart meters are placed on every home, they will contribute significantly to our exposure and this is both unwise and unsafe.

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### ***Chronology:***

*On July 30, 2010*, California State Assembly Member Jared Huffman (San Rafael) asked the California Council on Science and Technology (CCST) to provide an assessment of the safety of Smart Meters.

*On August 16, 2010*, CCST agreed to compile and assess the evidence available to address the following two issues:

1. Whether FCC standards for Smart Meters are sufficiently protective of public health taking into account current exposure levels to radiofrequency and electromagnetic fields.
2. Whether additional technology specific standards are needed for Smart Meters and other devices that are commonly found in and around homes, to ensure adequate protection from adverse health effects.

*On October 4, 2010*, I was invited to be part of a Technical Response Team and, as part of that team, I was asked to provide a written response to two key concerns mentioned above.

*On October 12, 2010*, I submitted my report to CCST.

*On December 13, 2010*, I was informed that CCST was not appending any documents to their report, nor were they making these documents available to others, but they were recognizing those who contributed.

*On January 11, 2011*, CCST released their report "Health Impacts of Radio Frequency from Smart Meters" on their website: <http://www.ccst.us/news/2011/20110111smart.php>. CCST is receiving public comments until January 31, 2011.



This is a report on the review of the California Council on Science and Technology document, "Health Impacts of Radiofrequency from Smart Meters". I am a public health physician and former Dean of the School of Public Health at the University at Albany. I have been involved in review and analysis of studies on electromagnetic fields, including radiofrequency fields, for many years. I served as the Executive Secretary to the New York State Powerlines Project in the 1980s, and have published several reviews on the subject and have edited two books. In addition I was invited to present to the recent President's Cancer Panel on the subject of powerline and radiofrequency fields and cancer.

This document is not an accurate description of the state of the science on the issue of radiofrequency fields, and is full of inaccuracies. My specific concerns are as follows:

1. The benefit of the smart meters is entirely to the utilities, and is economic in nature. If they install smart meters they can fire those individuals who at present are employed to go around reading meters. Thus this is a job-killing proposal, and will increase unemployment in a state that already has too much.
2. When a smart meter is installed residents have no choice in the matter nor ability to avoid exposure. But every individual has the option to use or not use other personal wireless devices, until more is known about health consequences of chronic RF exposure. There is a major difference between an exposure which an individual chooses to accept and one that is forced on individuals who can do nothing about it.
3. The statement "The potential for behavioral disruption from increased body tissue temperatures is the only biological health impact that has been consistently demonstrated and scientifically proven to result from absorbing RF within the band of the electromagnetic spectrum that smart meters use" is totally wrong. In the first place there are many adverse health effects other than "behavioral disruption" demonstrated as a result of tissue heating. The evidence for increased risk of brain tumors, acoustic neuromas and parotid gland tumors in individuals who have used a cell phone for 10 years or more is consistent, and the tumors occur only on the side of the head where the phone is used. There is also strong and consistent evidence for increased risk of leukemia in individuals who live near to high power AM radio transmission towers, even though this report characterizes such exposures as being "quite low" and show in Figure 7 that they are lower than the RF fields from smart meters.
4. The statement "The scientific consensus is that body temperatures must increase at least 1°C to lead to potential biological impacts from the heat" is totally wrong, and makes it obvious that no persons with medical or biological expertise participated in this report. Every enzyme system in the body is exquisitely sensitive to temperature, and increases activity by even a fraction of a degree increase in temperature. In fact all RF generates heat, and what is defined as "non-thermal" is only a function of our ability to measure the temperature increase.
5. The statement "While concerns of brain cancer associated with mobile phone usage persist, there is currently no definitive evidence linking cell phone usage with increased incidence of cancer" is incorrect. The evidence is strong and consistent among studies looking at long-term and intensive use of cell phones. The AM radio studies mentioned above are also relevant, particularly because like smart phones radio transmission towers give whole body radiation, not just to the head.
6. The statement "There currently is no conclusive scientific evidence pointing to a non-thermal cause-and-effect between human exposure to RF emissions and negative health impacts" is





inaccurate, and depends totally on what one defines as "conclusive". In biology and medicine there is nothing that is 100% proven. We rely on statistical significance and weight of evidence when drawing conclusions about health effects. When one uses these definitions there is conclusive scientific evidence for adverse health effects in humans.

7. The evidence for adverse effects of radiofrequency radiation is currently strong and grows stronger with each new study. Wired meters with shielded cable do not increase exposure. The report clearly indicates that "smart meters could conceivably be adapted to non-wireless transmission of data. However, retrofitting millions of smart meters with hard-wired technology could be difficult and costly." Clearly the answer to this dilemma is not to install wireless smart meters to begin with.

Thank you for the opportunity to comment on this faulty report, and on the general issue of smart meters. Their use is unwise from both a public health point of view, which is where my expertise lies, but and also from a purely short and long-term economic point of view.

Yours sincerely,

David O. Carpenter, M.D.

Director, Institute for Health and the Environment  
University at Albany