

Wireless Technology—How Safe is it?

In December of 2012, the Texas PUC released a report regarding smart meter safety, which can be found at the link below.

http://puc.texas.gov/industry/electric/reports/smartmeter/SmartMeter_RF_EMF_Health_12-14-2012.pdf

Some excerpts from the cover letter are:

- Recently, some citizens of Texas have expressed concern over the potential health effects of exposure to the radiofrequency emissions from the wireless technology of advanced metering.
- Therefore, Staff decided to investigate the health concerns expressed by citizens and other interested parties. The product of this investigation is the attached document intended to objectively address the issue and help inform decision makers.
- Staff has determined that the large body of scientific research reveals no definite or proven biological effects from exposure to low-level RF signals. Further, Staff found no credible evidence to suggest that advanced meters emit harmful amounts of EMF.

And finally there is this: “While many different organizations have performed primary research on health and RF EMF, Staff relied heavily on the following sources:

- 1.** The California Council on Science and Technology (CCST), an independent state agency, assessed the available evidence of whether FCC standards provide sufficient protection of public health. Its report also questioned whether additional standards are needed to ensure adequate protection from adverse health effects of wireless communication technology.
- 2.** The Michigan Public Service Commission requested help from Lawrence Berkeley National Laboratory (LBNL) in assessing claims made by some individuals who refuted the findings of the CCST report. The PUCT report summarizes the LBNL work.
- 3.** The measurements and assessments performed by the Electrical Power Research Institute (EPRI), an organization that performs research and provides technical expertise to the electrical utility industry.”

In order to evaluate any document “assessing” wireless technology safety, or the safety of any wireless device, such as smart meters, one must first understand the monumental battle in which the wireless industry is engaged. The industry is so massive and so lucrative, that those controlling (and benefitting from) wireless technology have enormous incentives to hide the fact that wireless technology, certainly at the levels permitted by the FCC, is very damaging to all life forms. If this truth were announced to the general public, not only would sales of wireless devices plummet, but there would be so many lawsuits against those companies for damaged health and premature deaths that these companies would be bankrupted. To even allow the FCC to lower the RF guidelines

to the levels found in other countries, which in many cases are orders of magnitude below the US and Canada, would bring financial chaos to the industry. Therefore, to hide the truth, the industry coerces scientists and politicians to play their game of denial and confusion (similar to what was done by the tobacco industry for decades), and anyone unwilling to play loses their research funding, their job, their reputation or worse. This is what happened to Dr. George Carlo, and documented in his book “Cell Phones, Invisible Hazards in the Wireless Age”. Similar stories can be found in Devra Davis’ book “Disconnect” and Carleigh Cooper’s book “Cell Phones and the Dark Deception”.

Every time a new scientific study or report is announced that finds harm from wireless technology, the industry ‘machine’ rises up and quotes other seemingly legitimate studies, reports and “experts” who say the opposite. The only way to reliably determine who is telling the truth is to ‘follow the money’, which means, determine who funded the study. If any funding (or staffing) of a study comes from the wireless industry, the results are likely to be “no effect found”. Dr. Henry Lai’s frustration with the increasing body of contradictory research led him to do an analysis in 2006 of the available studies on cell phone radiation between 1990 and 2006, and where their funding came from. What he found was that 50 percent of the 326 studies showed a biological effect from radio-frequency radiation and 50 percent did not. But when he filtered the studies into two stacks—those funded by the wireless industry and those funded independently—Lai discovered industry-funded studies were 30 percent likely to find an effect, as opposed to 70 percent of the independent studies.

Lai says that, while his findings highlight the crucial role industry funding plays in scientific research, the 50-50 split alone should be cause for concern. “Even if you accept all the industry studies, you still end up with 50-50,” he says. “How could 50 percent all be garbage? People always start with the statement ‘Hundreds of studies have been done on this topic, and no effect has been found,’ but this is a very misleading statement. [The statements] come out from the cell phone industry, and people just use it, like the American Cancer Society. People haven’t even gone in to look at the real studies and look at the effects that people have reported. This really worries me, because people come out and say things without the facts.”

The reality is, there are thousands of peer-reviewed, scientific studies that find bioeffects from wireless radiofrequency. The BioInitiative Report in 2007, and the BioInitiative 2012 document thousands of such studies. Yet the wireless industry continues to make statements like that in the PUC Texas report, that “Decades of scientific research have not provided any proven or unambiguous biological effects from exposure to low-level radio frequency signals.” Quite simply, that is a lie.

When an alarming study comes out, the industry carefully constructs a study that is similar, but not identical, to the one finding harm. The subtle differences are intentionally around aspects that ensure a different outcome. The industry then announces that other scientists were “unable” to replicate the results from the alarming study. A result of “no effect” is typically accomplished by structuring the study from the outset so that the desired outcome is achieved. This was done in the Interphone Study,

which received 25% of its funding from the wireless industry. Some of the methods used were to co-mingle exposed individuals in the supposed control group. Users of cordless DECT phones (wireless home phones) were included in the “unexposed” control group, thus guaranteeing minimal differences between the exposed and “unexposed” participants since in fact both groups had RF exposure. Business users, the heaviest cell phone users at the time, were excluded from the “exposed” group and allowed to remain in the “unexposed” control group. Another ploy used was to keep the study duration shorter than the time it typically takes for diseases, such as cancer, to manifest.

National Cancer Institute—The graph of the growth in cell phone users, found here:

<http://www.bing.com/images/search?q=graph+of+US+cell+phone+use+&qpv=graph+of+US+cell+phone+use+&FORM=IGRE#view=detail&id=8A6389C1AF0E37F4127A258CD86C0E5C5660DC37&selectedIndex=4>

shows that the number of users didn’t even hit 12 million until 1998. By 2008, that number was over 70 million. To look at cancer rates without allowing the 10-20 year latency is another ‘trick’ to assure “no harm found” is the conclusion.

Another was to define a “regular user” of cell phones as one who made at least one call per week for 6 months. Despite such flaws, the Interphone study still found an increase in brain cancer among heavy cell phone users.

A more recent example is the study Richard Tell conducted for the Electric Power Research Institute in December 2010 where smart meter emissions were measured in a grassy field, so there was very little reflection (no smooth, hard surfaces such as concrete, asphalt or aluminum siding typically found in urban settings), in order to minimize the RF measurements. Highly reflective environments can increase exposure 1000 to 2000 times. Further, banks of 10 meters were measured, and the measurement for one meter was mysteriously extrapolated from the 10-meter data, with no explanation of how it was calculated.

Another example of industry ‘influence’ was at the World Health Organization (WHO). The International Agency for Research on Cancer (IARC) (a division of WHO) for many years had Anders Ahlbom as the Chairman of the epidemiology group. In that position he dismissed all studies indicating health risks or biological effects of wireless. When it was discovered that he had failed to disclose that he was the founder of a mobile phone lobbying firm, he was ousted. Shortly after, the IARC declared wireless radiofrequencies to be a possible carcinogen, an outcome he had been successfully blocking.

Turning to the document at hand, the PUCT report, only industry influenced sources were relied upon for guidance. The first report cited was from CCST, which in fact drew most of its data from the EPRI study produced by Richard Tell Associates. So of the three sources “Staff relied heavily on”, two used the same data.

The CCST report claimed to have reviewed many sources of data, but in fact any sources that ran counter to the “no harm found” desired outcome were rejected. Input was

solicited from Prof. Magda Havas for example, but her submission was rejected. The CCST report was severely criticized by experts from around the world including Elihu Richter, MD, MPH Hebrew University, Hadassah School of Public Health and Community Medicine Occupational and Environmental Medicine; David O. Carpenter, MD, Director, Institute for Health and the Environment University at Albany, New York; Olle Johansson, PhD Department of Neuroscience Experimental Dermatology Unit, Karolinska Institute, Sweden; Lukas Margaritis, PhD, Professor of Cell Biology and Electron Microscopy University of Athens, Greece; Adamantia F. Fragopoulou, Biologist, PhD Candidate University of Athens, Greece; Samuel Milham, MD, MPH Epidemiologist Retired – Washington State Health Department; Magda Havas, PhD Environmental and Resource Studies Trent University Ontario, Canada; Nancy Evans, BS Health Science Consultant San Francisco, CA; Cindy Sage, MA, Sage Associates, Co-Editor of the BioInitiative Report, Author – Smart Meter RF Assessment Report, Santa Barbara, CA; Raymond Richard Neutra M.D. Dr. PH Albany, CA; Janet Newton, President EMR Policy Institute, Marshfield, Vermont; Karl Maret, MD, Dove Health Alliance, Aptos, California; and Yasuko Kato, Association Director VOC-EMF Measures Research, Hokkaido, Japan. The conclusions drawn by CCST could not have been reached if they had in fact consulted all of the sources they claimed. Instead, the report drew heavily from one study from EPRI, which was conducted by Richard Tell Associates.

The only other source that Staff relied heavily upon was two letters written to the Michigan PSC from the Lawrence Berkeley National Labs, co-authored by Roger Levy and Janie Page. They are both listed as being in the Demand Response Research Center. Wikipedia defines Smart Grid Demand-Response as, “Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices.” Mr. Levy has an MBA and assists utilities with the business concepts and processes involved in deploying a smart grid. Accordingly he has no credentials that qualify him to critique studies regarding the health effects of microwave radiation.

Janie Page has the credentials, but she also holds two patents (under the name Janie P. Blanchard, together with Carl Blackman) on how to start and stop cellular processes by controlling the flow of calcium and magnesium ions with electromagnetic frequencies. She is the last person who should be claiming that microwave radiation is not capable of having nonthermal (unrelated to tissue heating) biological effects. Her statement “there are no identified clear mechanisms for non-thermal RF EMF effects” is clearly proven false by her own patents! One can only speculate as to how the wireless industry induced her to deny her knowledge. Further, why does the LBNL Demand Response center need someone who knows how to manipulate cellular processes with microwaves? The suggestion by some that smart meters can be used as a weapon may not be so farfetched after all.

As for the dispute over electrosensitivity (EHS), as part of their assessment, the PUC minimized the monumental World Health Organization (WHO) pronouncement

categorizing wireless technology as a 2B possible carcinogen, claiming the use of DDT and lead to exemplify the category was “biased”, and coffee and pickled vegetables should have been used. That suggestion is biased in the other direction, especially since the possible carcinogen was not just any “pickled vegetables” but a specific type of Asian fermented kimchi. The other reference to the WHO quoted an outdated 2005 WHO document (which is in the process of being reversed for the 2015 version) which claims there is no evidence that RF causes EHS. The tests to which the LBNL letter refer that purport to disprove the validity of EHS only show that the ‘researchers’ who structured the tests didn’t understand the syndrome, how quickly or slowly the symptoms are activated and by what amount of exposure. Further, at a conference in Rome in 2011 on the health risks of wireless, Prof. Bellpomme gave a talk on specific medical tests to diagnose EHS, including blood tests. His video is on youtube.

Many supposed ‘new’ reports on the safety of smart meters merely parrot prior reports. CCST for example relied heavily on the reports from the Electric Power Research Institute. EPRI is nothing more than an advocacy group for the electric utilities funded by the electric utilities. Until recently, their reports proudly stated, “EPRI’s members represent more than 90 percent of the electricity generated and delivered in the United States.” That is not an independent, unbiased organization. Further, the reports EPRI is referencing were produced by Richard Tell Associates. Mr. Tell has been a long standing Chairman of Subcommittee 2 of the IEEE Standards Coordinating Committee and also Chair of the Risk Evaluation Working Group. In 1999, the Radiofrequency Interagency Working Group (a federal interagency working group including the FDA, FCC, OSHA, the EPA and others), sent a letter to Mr. Tell in this capacity identifying 14 areas of concern with the existing FCC guidelines including lack of a cap on the momentary peak emissions, no distinction between pulsed and continuous wave emissions, and no distinction between acute and chronic exposure. Mr. Tell failed to act on these significant concerns which remain unaddressed by the FCC standards today.

In the December 2010 report he prepared for EPRI, Mr. Tell incorporated much sleight of hand, making a show of doing much testing that revealed little. He tested three different types of mesh used in stucco houses, (since wire mesh would block more RF than any other home building material) but failed to test any other type such as cedar siding or brick, leaving the misimpression that the amount of RF blocked by a stucco wall was typical for all building materials. Much ado was made over duty cycles, when the important factor affecting health is how often the meters transmit, not what percentage of a day it is active. To say a meter is only transmitting 1%-5% of the time in a day gives a very different picture than the reality that they transmit anywhere from 10,000 to 190,000 times per day, which is between once every 8.6 seconds up to twice per second. It doesn’t matter that each transmission typically lasts only 10-20 milliseconds. Additionally, the amount of RF exposure was incorrectly compared to other household emitters, such as a microwave oven and a cell phone. The microwave oven data was very outdated and referred to the maximum limit, not actual measured leakage. Interestingly, the current FDA limit on microwave oven leakage at the two foot distance listed is 34.7 uW/cm² (based upon a stated limit at 2 inches of 5 milliW/cm², converted to 2 feet), not the 200 max as stated in CCST (taken from Richard Tell’s data). At the distance given

for a smart meter, three feet, the leakage limit drops to 15.43, compared to a listed 40 for a smart meter (however the 40 was mysteriously extrapolated from a measurement of 10 meters in a farmer's field and the actual exposure level is likely far higher). The cell phone exposure shown was at least an order of magnitude higher (and possibly 20 times higher) than current cell phone emissions, and no make or model was stated making verification of the number difficult. (Recently, a new analysis of the CCST data shows why this is so: <http://thetruthaboutsmartgrids.org/2013/06/24/cell-phone-rf-emissions/> The Author of that document has earned a B.S. in Engineering Physics and an M.S. in Nuclear Engineering with a specialty in radiation protection, both degrees received from the University of Illinois at Urbana-Champaign. He was employed by a leading electric utility for over 25 years. His full credentials are at the end of the linked document.) Lastly, the possible amount of reflection of the RF signals, which could dramatically increase an individual's exposure, was not considered, an area Cindy Sage wrote about extensively. Yet this CCST chart, which is chock full of wrong information and 'apples to oranges' comparisons, has been widely disseminated as "proof" that smart meter emissions are much less than other RF emitting devices. Never mind that use of the other devices is completely voluntary and only the smart meter is being forced on citizens without their consent.

Interestingly, Richard Tell worked for the Center for Devices and Radiological Health, the arm of the FDA that regulates microwave oven emissions, so he of all people should have been able to get an accurate emissions number.

Since Richard Tell is behind many of the reports claiming smart meters are safe, one should look into his background in order to understand his motivations. Mr. Tell obtained a B.S. degree in math and physics in 1966, and an M.S. degree in radiation science in 1967. He lists 11 other courses in "other training" without giving the course duration, and all but one were completed by 1976. The final course, in 1982 was in antenna modeling. The point is, his training predates much of the scientific studies that found bioeffects from wireless radiofrequency radiation. On his company website, Mr. Tell says the first 20 years (67-87) of his career were spent working for the federal government. In a separate section, he states his military service spanned '69-'87. He states his federal career was first working for the Center for Devices and Radiological Health (the organization managing microwave oven emissions) and then for the U.S. Environmental Protection Agency where he served as Chief of the Electromagnetics Branch. In that capacity, he supported the agency's program to develop a public exposure standard for RF fields. During his tenure at the EPA, his program provided technical support to the Federal Communications Commission (FCC) as the FCC adopted new rules for human exposure to RF fields.

Among his "experience highlights", he lists first "Chairman of the Subcommittee 4 Risk Assessment Working Group in connection with revision of the C95.1-1999 RF safety standard and development of the recent C95.1-2005." This is the revision that ignored the majority of the recommendations made by the RF Interagency Work Group. One can only speculate, that having played a major role in shaping the prior standard, and not having been educated on the new findings regarding bioeffects, he just refused to accept

new ideas. This idea is further supported by one of his other “highlights”: Absorption of RF Energy in Man - Review of available RF dosimetric data from viewpoint of assessing thermal loads on man resulting from absorption of RF energy. Use of existing thermal stress data to examine how tissue temperature rise might be used as a possible basis for developing RF exposure safety standards. This is “old school” thinking.

Some of his other “experience highlights” are more disturbing:

“Investigation of Pulsed Magnetic Field Bio-effects - Investigation of experimental methods used in studies of the biological effects of weak, pulsed magnetic fields on the development of the chick embryo. Design of a controlled system for careful and documented replication of study first reported in Madrid, Spain to be performed by five, international research laboratories in an attempt to determine if originally reported results were valid.” If scientists are attempting to validate prior research, don’t they just follow the documented steps of the initial researcher? Why is there a need to “design” anything? This is particularly suspicious given that there was a summary of research at the EPA in Sept. 1984 titled, “Biological effects of Radiofrequency Radiation”. In the summary of section 5 it states: “Many reports of effects of RF fields that are amplitude modulated at very low frequencies have not been independently corroborated. The major exception is calcium-ion efflux from chick brain tissue *in vitro* at intensity levels far below those that cause heating. This exception, combined with the results of studies of brain biochemistry and EEGs in animals and with synaptosomes and human neuroblastoma cells in culture, provides evidence that Central Nervous System tissue from several species, including human beings, is affected by low-intensity RF fields sinusoidally amplitude modulated at specific low frequencies.” Health Effects Research Lab, Ofc of Research & Development, US EPA, Research Triangle Park, N. Carolina 27711. (FYI, Carl Blackman wrote section 5.8 on Genetics.) Was Richard Tell trying to disprove the chick brain study? Why is he so proud of having “designed” a “controlled system” to ‘replicate’ the study? Regardless, the EPA in 1984 knew pulsed RF has bioeffects.

Most significant, is that the thrust of the entire TX PUC report was to “prove” that smart meter emissions are within the FCC limits, and by inference “safe.” When one considers that other countries have RF limits several orders of magnitude below that of the US, and that thousands of peer reviewed scientific studies show bioeffects leading to diseases like cancer, ALS, Parkinson’s, diabetes and Alzheimers, who cares that its legal?

Ironically, many of the criticisms that the Texas PUC report levels at smart meter opponents are actually more appropriately aimed at the smart meter supporters. On page 21 of the PUC report there is the statement:

“A common tendency for laypeople is to “cherry pick” scientific literature. Cherry picking is the act of pointing to data or individual cases that seem to confirm a particular position, while ignoring a significant portion of data or cases that may contradict the position. Selectively referencing only the studies that support a view is a common example of confirmation bias.”

Yet this report, states in the cover letter, that “Staff relied heavily on” only three sources. Since one of the three was based upon the other, the Staff actually relied on only two sources: Richard Tell, with his apparent biases, and Janie Page, who holds a patent on

how to manipulate cellular processes with electromagnetic frequencies, yet claims, “To the best of our knowledge, there are no clear mechanisms identified for non-thermal RF effects...” Altering the flow of calcium ions, the area where Ms. Page holds a patent, is just such a “mechanism” for non-thermal effects.

The other sources mentioned such as under Government, Governmental Jurisdictions, Agencies and Academia evidence the same “cherry picking” behavior. There are towns and counties across the US that have moratoriums on smart meters based heavily on health concerns. There are also scientists and physicians around the world who have expressed deep concern over the high levels of RF exposure permitted by the FCC and in other countries, and even specifically requested a halt to all smart meter installations. Here is a very short list of some of those organizations:

Helsinki Appeal (2005) – Drs. & researchers
ICEM’s Benevento Resolution, Italy (2006) - Scientists (International Commission for Electromagnetic Safety)
Venice Resolution (2008) - Scientists
Freiburger Appeal (2008) - Doctors
Porto Alegre Resolution, Brazil (2009) – Scientists & Drs.
Seletun Scientific Statement (2010) - Scientists
Parliamentary Assembly Council of Europe –(2011)
Russian National Committee on Non-Ionizing Radiation Protection (2011)

Another criticism voiced by the PUC concerns Internet videos of smart meter emission measurements. The report states:

“When raising concerns about wireless technology, some opponents have acquired RF EMF measurement equipment and posted online videos showing readings being taken from smart meter installations. These videos have been presented as evidence that the smart meters were emitting RF EMF at levels higher than those claimed by utilities or meter manufacturers. More discerning viewers may question the validity of these videos for the following (7) reasons:

1. The videos tend to be brief, relying on fleeting numbers displayed on a readout;
2. The data do not appear to be recorded for later study or shared with others;
3. No evidence is provided that the operator is certified to use the measuring equipment;
4. It is not noted whether the operator received any formal training to avoid, for example, using improper techniques when setting up or handling the equipment;
5. Little explanation is offered to help the viewer determine if the appropriate settings were used (such as unit scaling) or whether instantaneous peak or average values were being measured;
6. No evidence is given that the equipment was properly calibrated; and
7. There may be other tools available which are better suited to the intended use.”

However this same PUC report includes, on page 43, the key findings of the City of Naperville RF Testing as some of the verification of the safety of smart meters. This is how the study was conducted. Naperville would not allow anyone but their staff to observe the testing; the City would not allow residents to pay for an electrical engineer to participate in the testing; the City failed to videotape the testing, so it is impossible to verify how the testing was done; the City's report clearly demonstrated that those involved in the testing knew very little about wireless technology, FCC requirements, or even how to properly operate the Narda measuring device. It appears the individuals conducting the testing received little to no training on how to properly measure smart meter emissions. Electrical engineers who reviewed the Naperville report found a multitude of errors in the measurements and how they were obtained. All told, the Naperville RF testing failed to meet 5 of the seven above listed concerns (meeting only #2 and # 7) regarding Internet posted RF measurement videos. Yet with no "vetting" of the validity of the report, it is included in the Texas PUC report as substantiating evidence of smart meter safety.

It is clear that wireless technology is harmful to all living things. Admitting that would be very costly to industry and our government. So instead of halting the smart meter program, industry and government collude to hide the facts.