BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Alan V. Schmukler,	:	
	:	
Complainant,	:	
	:	
v.	:	Docket No. C-2017-2621285
	:	
PPL Electric Utilities Corporation,	:	
	:	
Respondent.	:	

NOTICE TO PLEAD

YOU ARE HEREBY ADVISED THAT, PURSUANT TO 52 PA. CODE § 5.103(c), YOU MAY FILE A REPLY TO THE ENCLOSED MOTION WITHIN TWENTY (20) DAYS AFTER THE DATE OF SERVICE. YOUR REPLY SHOULD BE FILED WITH THE SECRETARY OF THE PENNSYLVANIA PUBLIC UTILITY COMMISSION, P.O. BOX 3265, HARRISBURG, PA 17105-3265. A COPY OF YOUR REPLY SHOULD ALSO BE SERVED ON THE UNDERSIGNED COUNSEL.

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Date: March 6, 2018

Attorneys for PPL Electric Utilities Corporation

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MOTION IN LIMINE OF
PPL ELECTRIC UTILITIES CORPORATION TO
EXCLUDE THE COMPLAINANT'S EXHIBITS

TO ADMINISTRATIVE LAW JUDGE ELIZABETH H. BARNES:

PPL Electric Utilities Corporation ("PPL Electric" or the "Company") hereby files this Motion in Limine pursuant to the Pennsylvania Public Utility Commission's ("Commission") regulations at 52 Pa. Code § 5.103 and requests that Administrative Law Judge Elizabeth H. Barnes (the "ALJ") exclude exhibits submitted by Alan V. Schmukler ("Complainant") because they are hearsay and not subject to a hearsay exception under the Pennsylvania Rules of Evidence. Moreover, the Complainant's exhibits also should be excluded because they are irrelevant, lack authenticity, and are inherently unreliable. Further, the Complainant's recently submitted written rebuttal testimony[1] to the Company's expert testimony should be excluded on similar grounds.

In support thereof, the Company states as follows:

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[1] Attached hereto as **Appendix A** and **Appendix B**, respectively, are true and correct copies of the Complainant's proposed exhibits and rebuttal testimony. PPL Electric is providing copies of the Complainant's exhibits and rebuttal testimony out of an abundance of caution, as the Company does not know whether the ALJ has received the Complainant's exhibits and rebuttal testimony or not.

I. BACKGROUND

1. PPL Electric is a public utility that provides electric distribution and provider of last resort services in Pennsylvania subject to the regulatory jurisdiction of the Commission. PPL Electric furnishes electric distribution, transmission, and provider of last resort electric supply services to approximately 1.4 million customers throughout its certificated service territory, which includes all or portions of 29 counties and encompasses approximately 10,000 square miles in eastern and central Pennsylvania.

2. On September 26, 2017, PPL Electric was served with the above-captioned Complaint filed by the Complainant.

3. On October 16, 2017, PPL Electric timely filed an Answer to the Complaint.

4. On October 26, 2017, a Notice was issued scheduling a telephonic evidentiary hearing for February 2, 2018.

5. On November 3, 2017, the ALJ issued the First Prehearing Order, which set forth certain procedural rules in this proceeding.

6. On December 18, 2017, PPL Electric filed a Motion for Admission Pro Hac Vice of Curtis S. Renner, Esquire, as additional counsel on behalf of the Company.

7. On December 21, 2017, PPL Electric filed a letter requesting that the February 2, 2018 hearing be rescheduled for March 9, 2018, because the Complainant contacted the Company and requested more time to prepare for the hearing.

8. On December 22, 2017, the ALJ issued the Second Prehearing Order, which, among other things, rescheduled the evidentiary hearing for March 9, 2018, and directed the parties to exchange all exhibits, reports, and statements by February 15, 2018.

9. On January 29, 2018, PPL Electric filed a letter requesting that any expert testimony and exhibits be presented in written form in advance of the hearing and exchanged by the parties on or before February 15, 2018.

10. On January 3, 2018, a Notice was issued re-scheduling the evidentiary hearing for March 9, 2018.

11. On January 9, 2018, the ALJ issued an Interim Order granting the Motion for Admission Pro Hac Vice.

12. On February 15, 2018, PPL Electric and the Complainant exchanged their exhibits, reports, and statements.

13. PPL Electric hereby submits this Motion in Limine seeking to exclude the exhibits submitted by the Complainant because they are hearsay and not subject to a hearsay exception under the Pennsylvania Rules of Evidence.

II. MOTION IN LIMINE

14. The Complainant has submitted the following exhibits in advance of the evidentiary hearing. As summarized below, these exhibits should be excluded[2] from the record because they are objectionable on several grounds, including hearsay, relevance, authenticity, failure to disclose in discovery, and inherent unreliability:

- Introduction to Exhibits – Complainant's proposed exhibits are preceded by a five-page "Introduction" that includes a biographical statement, a statement of medical claims, Complainant's opinions about exposures from AMI meters, scientific research about RF fields and health risks to the general population, and his claims about fire hazards and insurance issues. This "Introduction" is not labeled as a proposed exhibit and should not be admitted into evidence. At a minimum, the extensive opinion testimony and hearsay in the document should be excluded.

[2] All of the Complainant's exhibits are accompanied by cover sheets characterizing the exhibit and stating the exhibit's purpose. These cover sheets should all be excluded as well for the reasons explained for their corresponding exhibits. Therefore, when the Company refers to a specific exhibit, its reference includes the accompanying cover sheet to that exhibit.

- Exhibit 1 – Letter from one medical doctor and three letters from practitioners of homeopathy (alternative medicine).

  Objections: (1) hearsay opinions about medical issues; (2) medical opinions by witness not identified in discovery and not admitted to testify; (3) medical opinion testimony by non-medical witnesses not identified in discovery; (4) authenticity– the proposed exhibit is a composite of documents from multiple different sources; (5) medical records not disclosed in discovery – Complainant was asked to provide his medical records regarding any medical condition he claimed was relevant to this proceeding and has not provided any medical records from these practitioners other than their similarly conclusory one-page letters apparently obtained specifically for use in this case.

- Exhibit 1B – National Institutes of Health discharge papers from 1981 showing a final diagnosis of "Phase lag sleep disorder".

  Objections: (1) hearsay opinions about medical issues; (2) authenticity – the proposed exhibit is an incomplete copy compiled from at least two different documents, beginning with a hand numbered page 2 and missing page 3; (3) medical records not disclosed in discovery – Complainant was asked to provide his medical records regarding any medical condition he claimed was relevant to this proceeding and has not provided any medical records other than these two pages.

- Exhibit 1C – A document entitled "Therapeutics for Circadian Rhythm Sleep Disorders" written by Ehren R. Dodson, Ph.D., and Phyllis C. Zee, Ph.D.

  Objections: (1) hearsay opinions about medical and scientific issues; (2) authenticity – the proposed exhibits is an incomplete copy of unpublished manuscript and is not the actual study from a peer-reviewed scientific journal; (3) relevance – the proposed exhibit does not address RF fields from the AMI meters being used by PPL Electric.

- Exhibit 2 – A copy of Mr. Schmukler's email correspondence in September 2007 with George Lechter, CEO of Technology Alternatives Corp, about the purchase of a new computer monitor, as well as a webpage print out about the location and contact information of "Safe Technologies Corporation".

  Objections: (1) hearsay; (2) relevance; (3) authenticity – the proposed exhibit is a composite of different documents.

- Exhibit 2B – Written correspondence sent by the Complainant, his wife, and a Comcast representative about an October 23, 2011 work order.

  Objections: (1) relevance; (2) authenticity – the proposed exhibit is a composite of multiple different documents.

- Exhibit 3 – Job performance reports about the Complainant from 1987 through 1991 related to his work at the Philadelphia Commission on Human Relations.

  Objections: (1) hearsay; (2) relevance; (3) authenticity.

- Exhibit 4 – One page excerpt from report prepared for the Architectural and Transportation Barriers Compliance Board.

  Objections: (1) hearsay; (2) authenticity – the proposed exhibit is a part of one page from a much longer report; (3) inherently unreliable – the portion of the report included in the proposed exhibit has been altered to remove the relevant language about the Board not adopting ADA rules for electromagnetic sensitivity.

- Exhibit 5 – An excerpt from a document entitled "EMR Reduces Melatonin in People" by Dr. Neil Cherry.

  Objections: (1) hearsay opinions on medical and scientific issues; (2) proposed medical opinions from a non-medical source (Dr. Cherry, was a meteorologist) who was not identified in discovery; (3) inherent unreliability – the proposed exhibit lists studies without providing bibliographic citations and several studies do not appear to exist in the published literature; (4) relevance – for the studies that can be identified, none of them involve radiofrequency ("RF") fields from automated metering infrastructure ("AMI") meters and most of the studies do not even involve RF fields; (5) inherently unreliable – Dr. Cherry, who is deceased, was an advocate of health effects from power line EMF and RF fields; his opinions about alleged health effects from RF fields were rejected as inadmissible by the U.S. District Court in Baltimore, *Newman v. Motorola*, 218 F. Supp. 2d 769 (D. Md. 2002).

- Exhibit 6 – A document which lists alleged examples of "[l]egal awards, cases, laws and recognition of/for ES and EHS."

  Objections: (1) hearsay opinions from unidentified author(s); (2) hearsay within hearsay where the document presents quotes from or opinions of third-parties; (3) relevance – the proposed exhibit does not address RF fields from AMI meters; (4) inherently unreliable – the proposed exhibit is based on material from the anti-EMF/RF advocacy site "electrosensitivity.com" and is a compilation of unsubstantiated allegations taken from media reports, legal complaints and unidentified sources.

- Exhibit 7 – A document entitled "Research Studies into Electrical Sensitivity," which lists and quotes a series of purported research articles.

  Objections: (1) hearsay opinions about medical and scientific issues from unidentified author(s); (2) hearsay within hearsay where the document presents quotes from or opinions of third-parties; (3) relevance – the proposed exhibit does not address RF fields from AMI meters being used by PPL Electric and addresses

health conditions not claimed by Complainant; (4) authenticity – the proposed exhibit does not include actual, complete studies but instead presents selective and unverified quotes purportedly taken from studies; (5) inherently unreliable – the proposed exhibit is based on material taken from the anti-EMF/RF advocacy site "es-uk.info".

- Exhibit 8 – An excerpt from a document entitled "Electromagnetic Hypersensitivity."

  Objections: (1) hearsay opinions about medical and scientific issues; (2) relevance – the proposed exhibit does not address RF fields from AMI meters; (3) authenticity – the proposed exhibit states that it is an incomplete portion of a longer article; (4) inherently unreliable – the proposed exhibit is based on material taken from the anti EMF/RF advocacy site "saferemr.com."

- Exhibit 9 – An abstract of a study on microwave EMFs.

  Objections: (1) hearsay opinions about medical and scientific issues; (2) authenticity– the proposed exhibit contains selected and unverified portions of a scientific study but is not the actual as-published study; (3) relevance – the proposed exhibit does not address RF fields from the AMI meters being used by PPL Electric and does not address the health claim made by Complainant; (4) inherently unreliable – the proposed exhibit alters the original study by adding language and bolding that are not in the actual study, changing the order of portions of the study and omitting most of the contents of the actual study.

- Exhibit 10 – A letter written by Dr. David O. Carpenter to the New York State Public Service Commission dated August 12, 2016.

  Objections: (1) hearsay opinions about medical and scientific issues; (2) medical opinions by witness not identified in discovery and not admitted to testify; (3) inherently unreliable – the opinions in the proposed exhibit are based on the incorrect assumption that "while the cell phone is used only intermittently a smart meter environment is continuous", which is directly contradicted by the uncontroverted evidence of Dr. Davis that the AMI meters being used by PPL Electric use RF fields for a total of only 84 seconds per/day; (4) relevance – the proposed exhibit does not address the RF fields from the AMI meters being used by PPL Electric; (5) authenticity – the document's author is not being presented to authenticate the accuracy of the factual statements in the document.

- Exhibit 11 – An online article about unpublished scientific research.

  Objections: (1) hearsay opinions in a media story about a scientific study; (2) hearsay within hearsay where the media story presents quotes from or opinions of third-parties; (3) relevance – the media report does not address the electromagnetic sensitive issues raised by Complainant; (4) relevance – the content of the proposed exhibit does not address the RF fields from the AMI

meters being used by PPL Electric; (5) inherently unreliable – the proposed exhibits adds language to the online article and omits portions of the article.

- Exhibit 12 – A document titled "A Coming Storm For Wireless" by Gloria Vogel.

  Objections: (1) hearsay opinions about medical and scientific issues in a media story about insurance coverage; (2) hearsay within hearsay where the media story presents opinions of third-parties; (3) relevance – the proposed exhibit addresses the possibility of occupational injuries to communications antenna workers, not RF fields from the AMI meters being used by PPL Electric.

- Exhibit 13 – A document titled "International EMF Scientist Appeal".

  Objections: (1) hearsay opinions about medical and scientific issues; (2) relevance – the proposed exhibit does not addresses RF fields from the AMI meters being used by PPL Electric; (3) inherently unreliable – the proposed exhibit is an online petition that represents opinions by anti-EMF/RF advocates, not scientific information.

- Exhibit 14 – A letter/petition to the California Public Utilities Commission (CPUC) dated January 19, 2012.

  Objections: (1) hearsay opinions about medical and scientific issues; (2) inherently unreliable – the proposed exhibit is an advocacy petition sent in 2012 to the then-Chairman of the CPUC, seeking a halt to the installation of Smart Meters in California; (3) inherently unreliable – the proposed exhibits contains false statements about the Federal Communications Commission ("FCC") RF exposure standards, which are directly contradicted by the FCC's own statements, as shown in the direct testimony of Dr. Davis in this case; (4) authenticity – the document's author is not being presented to authenticate the accuracy of the factual statements in the document.

- Exhibit 15 – Comments prepare by Daniel Hirsch.

  Objections: (1) hearsay opinions about medical and scientific issues; (2) relevance – the proposed exhibit does not address the RF fields from the AMI meters being used by PPL Electric; (3) inherently unreliable – the conclusions in the proposed exhibit are based on significant mistakes about RF exposures from AMI meters, as described in the direct testimony of Dr. Davis in this case; (4) authenticity– the proposed exhibit is not the full original document and has been altered by the addition of handwritten comments and markings.

- Exhibit 16 – A document titled "BioInitiative 2012".

  Objections: (1) hearsay opinions about medical and scientific issues; (2) authenticity – the proposed exhibit is selected portions of the actual report; (3) relevance – the proposed exhibit does not address the RF fields from the AMI

meters being used by PPL Electric; (4) relevance – the proposed exhibit addresses health conditions other than those alleged by Complainant; (5) inherently unreliable – the BioInitiative Report is an advocacy document and not a scientific study, and has been widely criticized for its lack of scientific objectivity and reliability, as addressed in Dr. Israel's direct testimony in this case; (6) authenticity – the document's author is not being presented to authenticate the accuracy of the factual statements in the document.

- Exhibit 17 – A World Health Organization press release entitled, "IARC Classifies Radiofrequency Electromagnetic Fields as Possibly Carcinogenic to Humans" dated May 31, 2011.

  Objections: (1) hearsay opinions about medical and scientific issues; (2) relevance – the proposed exhibit does not address RF fields from the AMI meters used by PPL Electric; (3) relevance – the proposed exhibit addresses health conditions other than those alleged by Complainant.

- Exhibit 18 – A document characterizing the results of research.

  Objections: (1) hearsay opinions about medical and scientific issues by an unidentified author; (2) relevance – the proposed exhibit does not address RF fields from AMI meters used by PPL Electric; (3) relevance – the proposed exhibit addresses health conditions other than those alleged by Complainant; (4) authenticity – the document's author is not being called as a witness to authenticate the accuracy of the factual statements in the document; (5) inherent unreliability – the proposed exhibit was prepared by the anti-EMF/RF "Environmental Health Trust" activist group.

- Exhibit 19 – A document about a researcher named Leif Salford.

  Objections: (1) hearsay opinions about medical and scientific issues by an unidentified author; (2) authenticity – the proposed exhibit appears to be a composite of information from different sources; (3) relevance – the proposed exhibit does not address RF fields from AMI meters used by PPL Electric; (4) relevance – the proposed exhibit addresses health conditions other than those alleged by Complainant; (5) inherent unreliability – the proposed exhibit appears to be taken from materials on the anti-EMF/RF "cellphonetaskforce.org" activist website.

- Exhibit 20 – A document entitled, "Smart Meter Switching-Mode Power Supply and Direct Electricity," which also contains abstracts of two articles: (1) "A new electromagnetic exposure metric: high frequency voltage transients associated with increased cancer incidence in teachers in a California school," by S. Milham and L.L. Morgan published in the *American Journal of Independent Medicine*, August 2008; and (2) "Direct electricity, chronic stress, neurotransmitters and disease" by S. Milham and D. Stetzer published in *Electromagnetic Biology and Medicine*, December 2013.

Objections: (1) hearsay opinions about medical and scientific issues from unknown and/or multiple authors; (2) authenticity – the proposed exhibit is a composite of selected portions of documents from multiple sources and authors; (3) relevance – the proposed exhibit does not address RF fields from AMI meters used by PPL Electric, which do not produce transients or "dirty electricity", as discussed in Dr. Davis's direct testimony in this case; (4) relevance – the proposed exhibit addresses health conditions other than those alleged by Complainant; (5) authenticity – the unknown author of portions of the document is not being presented to authenticate the accuracy of the factual statements in the document.

- Exhibit 21 – A document entitled, "Smart Meter Fire Hazard," which contains a list of various website links.

  Objections: (1) hearsay; (2) relevance; (3) authenticity – the proposed exhibit appears to be a selectively compiled list of statements and websites about alleged fire hazards.

- Exhibit 22 – A document entitled, "Smart Meter Opt out status in some states and municipalities," which lists and summarizes various webpages.

  Objections: (1) hearsay; (2) relevance – the proposed exhibit addresses opt-out provisions that are not relevant to the installation of AMI meters in Pennsylvania; (3) authenticity – the proposed exhibit appears to be a selectively compiled list of statements and websites about opt-out provisions in states other than Pennsylvania.

- Exhibit 23 – An article entitled, "Judge Rules Electric Utility's Smart Meter Opt Out Fees Violate State Law; PSREC Refuses to Reconnect" by Josh Hart dated April 16, 2015.

  Objections: (1) hearsay media article; (2) relevance – the subject of the proposed exhibit is a lawsuit over opt-out fees in California and does not address the installation of AMI meters in Pennsylvania.

- Exhibit 24 – An excerpt from the article, "Fifty Years Later: The Significance of the Nuremberg Code" by Dr. Evelyne Shuster, published in the *New England Journal of Medicine*, November 13, 1997.

  Objections: (1) hearsay; (2) relevance; (3) authenticity – the proposed exhibit is a selective and incomplete extract from the original.

15. In addition, on March 3, 2018, PPL Electric received via email two pieces of rebuttal testimony written by the Complainant in response to the written direct testimony of the Company's expert witnesses, *i.e.*, Dr. Christopher Davis and Dr. Mark Israel. As explained

below, the Complainant's rebuttal testimony, like his exhibits, should be excluded because they are based on and contain statements that are inadmissible hearsay, lack relevance, lack authenticity, and are inherently unreliable.

A. THE COMPLAINANT HAS SUBMITTED EXHIBITS THAT SHOULD BE EXCLUDED BECAUSE THEY ARE HEARSAY

16. The Complainant has submitted exhibits that should be excluded from the record in this proceeding because they are hearsay statements[3] and not subject to a hearsay exception.

17. Nearly all of the Complainant's 24 exhibits are hearsay because they are out of court statements being offered for the truth of the matter asserted.

18. Only portions of two exhibits contain any statements actually made by the Complainant. The rest of the exhibits are materials that were not written by the Complainant, such as various documents, reports, articles, excerpts of articles, abstracts of articles and studies, press releases, and letters.[4] (*See* Complainant's Proposed Exhibits 1-24) Moreover, the

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[3] Hearsay is an out-of-court statement offered to prove the truth of the matter asserted. Pa.R.E. 801; *Bonegre v. Workers' Compensation Appeal Board (Bertolini's)*, 863 A.2d 68, 72 (Pa. Cmwlth. 2004). Ordinarily, hearsay evidence is inadmissible unless some exception applies. Pa.R.E. 802. The hearsay rule is somewhat relaxed in proceedings before administrative agencies. *Rox Coal Co. v. Workers' Comp. Appeal Bd. (Snizaski)*, 570 Pa. 60, 807 A.2d 906 (2002). The Commonwealth Court established what is commonly called the "Walker Rule" to apply to the use of hearsay evidence during administrative proceedings:

> (1) Hearsay evidence, properly objected to, is not competent evidence to support a finding;
>
> (2) Hearsay evidence, admitted without objection, will be given its natural probative effect and may support a finding, if it is corroborated by any competent evidence in the record, but a finding of fact based solely on hearsay will not stand.

Walker v. Unemployment Comp. Bd. of Review, 367 A.2d 366, 370 (Pa. Cmwlth. 1976). The "Walker Rule" has been affirmed by the Pennsylvania Supreme Court. *Rox Coal Co. v. Workers' Comp. Appeal Bd. (Snizaski)*, 570 Pa. 60, 807 A.2d 906 (2002).

[4] The first is Exhibit 2: a chain of emails between the Complainant and George Lechter, in which there is one email sent by the Complainant on September 21, 2007. (*See* Complainant's Proposed Exhibit 2) The second is Exhibit 2B, which is written correspondence sent by the Complainant, his wife, and a Comcast representative about an October 23, 2011 work order. Included in Exhibit 2B is one letter written by the Complainant dated December 8, 2017, to a Comcast representative requesting copies of: (1) a work order for Comcast to "install a hard-wire connection to [the Complainant's] computers"; and (2) "any notes from phone conversations [the Complainant] had with Comcast, showing that [the Complainant] called Comcast and requested that the wifi to be shut off." (*See* Complainant's Proposed Exhibit 2B, p. 2)

Complainant represented in discovery that he is not calling any witnesses,[5] such as the authors of these various materials, to testify at the hearing and authenticate the statements therein. Therefore, these exhibits are out of court statements.

19. Further, the Complainant is submitting the exhibits to prove the truth of the matter asserted therein. According to the Complainant, these materials are being offered to prove, among other things, that: (1) "electromagnetic sensitivity is a recognized medical disability"; (2) he suffers from electromagnetic sensitivity; (3) "exposure to electromagnetic fields reduces melatonin levels in people and animals"; (4) "insomnia is the number one symptom reported after exposure to electromagnetic fields; (5) "smart meters expose people to approximately 160 times the radiation of a cell phone"; (6) "there is a worldwide consensus among scientists . . . that electromagnetic radiation (non-ionizing) . . . is a threat to health"; (7) smart meters produce "dirty electricity"; (8) "[s]mart meters are a potential fire hazard"; (9) "all insurers have withdrawn from the wireless industry market"; and (10) people in the country are asking to "opt-out of having smart meters." (*See* Introduction to Complainant's Exhibits, pp. 1-4)

20. Thus, these materials are hearsay statements and are inadmissible unless subject to a hearsay exception. *See* note 3, *supra.* Many of the proposed exhibits are hearsay within hearsay, because the documents purport to quote from and/or characterize the views of third-parties.

21. An exception to the hearsay rule is that an expert may express an opinion that is based on material not in evidence, including other expert opinions, where such material is of a type customarily relied on by experts in his or her profession. *See Lower Makefield Twp. v. Lands of Dalgewicz*, 4 A.3d 1114, 1122 (Pa. Cmwlth. 2010), *affirmed*, 67 A.3d 772 (Pa. 2013);

[5] A true and correct copy of the Complainant's discovery response is attached hereto as **Appendix C.**

Collins v. Cooper, 746 A.2d 615, 618 (Pa. Super. 2000); *Primavera v. Celotex Corp.*, 608 A.2d 515, 520-21 (Pa. Super. 1992); Pa.R.E. 703.[6]

22. Here, however, the Complainant represented in discovery that he is not calling any expert witnesses.[7] Therefore, none of these materials will be used form the basis of any expert witnesses' opinions.

23. The Complainant cannot rely on these materials to form his own opinion. The Complainant is not a medical or scientific expert and cannot rely upon these materials as a basis for forming and offering opinions about medical or scientific issues. *See* Pa.R.E. 702. "The test to be applied when qualifying an expert witness is whether the witness has any reasonable pretension to specialized knowledge on the subject under investigation." *Miller v. Brass Rail Tavern*, 664 A.2d 525, 528 (Pa. 1995). Nothing submitted by the Complainant attests that he is an expert in any of the fields relevant to the subject matters of physics, biophysics, chemistry, electrical engineering, electromagnetics, bioelectromagnetics, radio-frequency bioelectromagnetics and dosimetry, medicine, fire safety, law, or insurance policies.

24. Rather, the Complainant claims that he has experience in homeopathy, which is alternative medicine. The Complainant has not provided any evidence that he is a medical doctor licensed to provide medical diagnoses and/or care to patients in any jurisdiction the United States, or that he has a graduate degree in any of the scientific areas relevant to the health claims in this case. Certification in the Complainant's area of homeopathy (alternative medicine) does not require a medical degree and can be obtained with even having an undergraduate

[6] An expert may base his or her opinion on facts made known to the expert; "[t]hat those facts were in part hearsay does not invalidate the expert's opinion. *See Steinhauer v. Wilson*, 485 A.2d 477, 479 (Pa. Super. 1984). However, Pennsylvania Rule of Evidence 705 requires an expert to disclose to the fact-finder the facts or data on which the opinion is based. Pa.R.E. 705 ("If an expert states an opinion the expert must state the facts or data on which the opinion is based.").

[7] A true and correct copy of the Complainant's discovery response is attached hereto as **Appendix D**.

college degree. *See* www.homeopathy.com (website of North American Society of Homeopaths) (only degree required for certification is high school diploma). Moreover, the materials submitted by Complainant do not show that he claims any certification in homeopathy. No such certifications are claimed in the bibliographical materials on his website or in his book on homeopathics remedies.

25. Finally, even if these materials are allowed to form the basis of the Complainant's opinion or any expert's opinion, these materials cannot be submitted into the record. *See Klein v. Aronchick*, 85 A.3d 487, 503-04 (Pa. Super. 2014) (citing *Aldridge v. Edmunds*, 750 A.2d 292, 297-98 (Pa. 2000)). Although hearsay statements, such as articles, studies, and treatises, can be relied upon by expert witnesses in forming their opinions, the substance of those hearsay statements is not permitted to be entered into the record to prove the truth of the matter asserted. *See id.*; *Nigro v. Remington Arms Co.*, 637 A.2d 983, 993 (Pa. Super. 1993) (citations omitted). As explained previously in Paragraph 18, the Complainant has stated that he is offering all of these materials to prove the truth of the matter asserted. Thus, even if the Complainant is permitted to offer expert opinions in areas beyond his expertise and rely on these materials in forming the basis of his opinions, the proposed exhibits cannot be admitted into the record in this proceeding.

26. For these reasons, the Complainant's Exhibits 1 through 24 (with the exception of the portions of Exhibits 2 and 2B containing the Complainant's statements) should be excluded from the record. If not, PPL Electric's due process rights would be violated because the Company would be denied the opportunity to cross-examine the individuals who actually authored these materials and statements.

B. THE COMPLAINANT'S EXHIBITS SHOULD OTHERWISE BE EXCLUDED BECAUSE THEY ARE IRRELEVANT, LACK AUTHENTICITY, AND INHERENTLY UNRELIABLE

27. As noted above, many of Complainant's proposed exhibits also are inadmissible due to other significant flaws, including relevance,[8] authenticity,[9] failure to disclose during discovery,[10] and inherent unreliability.[11]

28. First, the contents of many of the proposed exhibits are irrelevant because they: (a) address exposures other than the RF fields from the AMI meters being used by PPL Electric; (b) address health conditions other than the one raised by Complainant; and/or (c) do not address issues relevant to the installation of AMI meters in Pennsylvania (see Complainant's Proposed Exhibits 1C, 2, 2B, 3, 5 – 13, 16 – 24).

29. Second, many of the Complainant's proposed exhibits lack authenticity because they: (a) are incomplete extracts or portions of other documents; (b) are composites of documents from multiple sources and different authors, or unknown authors; and/or (c) have

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[8] *See* Pa.R.E. 401 ("Evidence is relevant if: (a) it has any tendency to make a fact more or less probable than it would be without the evidence; and (b) the fact is of consequence in determining the action."); *Ecker v. Amtrak*, 2015 Phila. Ct. Com. Pl. LEXIS 98 (Mar. 13, 2015), *affirmed*, 2015 Pa. Super. Unpub. LEXIS 3615 (Pa. Super. 2015); *Parr v. Ford Motor Co.*, 109 A.3d 682 (Pa. Super. 2014), *appeal denied*, 2015 Pa. LEXIS 1150 (Pa. 2015). Even if evidence is relevant, such evidence may be excluded "if its probative value is outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence." *Parr*, 109 A.3d at 697 (quoting Pa.R.E. 403).

[9] *See* Pa.R.E. 901(a) ("To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is."). Indeed, "[w]hen a party offers evidence contending either expressly or impliedly that the evidence is connected with a person, place, thing, or event, the party must provide evidence sufficient to support a finding of the contended connection." Pa.R.E. 901, cmt. (citing *Commonwealth v. Hudson*, 414 A.2d 1381 (Pa. 1980); *Commonwealth v. Pollock*, 606 A.2d 500 (Pa. Super. 1992)).

[10] *Cf. Dominick v. Hanson*, 753 A.2d 824, 826-27 (Pa. Super. 2000) (finding that the materials withheld in discovery were admissible because although the non-producing party requested those materials in discovery, the non-producing party did not preserve its right to receive such materials); *see Smith v. Grab*, 705 A.2d 894, 902 (Pa. Super. 1997) ("[T]he purpose of the discovery rules is to prevent surprise and unfairness and to allow a fair trial on the merits.") (quotation omitted).

[11] *See Blum v. Merrell Dow Pharms., Inc.*, 705 A.2d 1314, 1325 (Pa. Super. 1997) (excluding expert testimony because the "analysis was so flawed as to render [the expert's] conclusions unreliable and therefore inadmissible"), *affirmed*, 764 A.2d 1 (Pa. 2000).

been reworded or "doctored" to alter the content of the document they purport to be (see Complainant Proposed Exhibits 1, 1B, 1C, 2, 2B, 3, 4, 7 – 10, 14 – 16, 18 – 22, 24).

30. Third, many of the exhibits have no identified author or source, thereby making them inherently unreliable; where the source of a proposed exhibit can be determined, many if not all of those documents were downloaded from the websites of anti-EMF/RF advocacy groups (see Complainant Proposed Exhibits 4 – 11, 13 – 16, 18 – 20). These types of anonymous and advocacy materials cannot be relied on as providing reliable and balanced statements about medical and scientific issues.

31. For these reasons, the Complainant's exhibits should be excluded because they are irrelevant, lack authenticity, were not properly disclosed during discovery, and are inherently unreliable.

C. THE COMPLAINANT'S RECENT "RESPONSES" TO THE DIRECT TESTIMONY OF DR. DAVIS AND DR. ISRAEL ARE SIMILARLY INADMISSIBLE EXPERT OPINIONS REPLETE WITH HEARSAY MATERIALS

32. In response to the written direct testimony submitted by PPL Electric's expert witnesses Dr. Christopher Davis and Dr. Mark Israel, the Complainant has prepared two documents styled as "responses," *i.e.*, rebuttal testimony, to the Company's expert direct testimony.

33. As explained above, the Complainant is not an expert in any area of medicine or science relevant to the issues in this case, has not been disclosed as an expert witness, and cannot offer expert opinion testimony in this case. His "responses" to the expert testimony of Dr. Davis and Dr. Israel on medical and scientific issues are inadmissible opinion testimony that should be excluded in their entirety. If not, every statement of opinion about medical and scientific issues in the responses should be excluded.

34. In addition, the Complainant's responses are based on his proposed exhibits and frequently refer to and/or quote from the exhibits. Almost every page of the Complainant's responses quotes from or contains a reference to some material from his proposed exhibits or a characterization of those exhibits. As explained above, all of these proposed exhibits are inadmissible hearsay and have numerous additional flaws, such as lacking relevance, authenticity, and reliability. Because the Complainant's responses are so fundamentally based on and intertwined with these inadmissible proposed exhibits, the responses are similarly inadmissible and should be excluded. At the very least, every reference to an inadmissible proposed exhibit and any content derived from that exhibit should be excluded.

35. The Complainant's responses also contain numerous quotes from third-party materials not included in his proposed exhibits and internet links to other materials he proposes to introduce into the record. As with the Complainant's proposed Exhibits 1 – 24, these new "sources" are inadmissible hearsay, and there is no basis to admit them into the record.

III. CONCLUSION

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that Administrative Law Judge Elizabeth H. Barnes grant this Motion in Limine and exclude the Complainant's exhibits and written rebuttal testimony from the evidentiary record in this proceeding, as explained above.

Respectfully submitted,

Kimberly A. Klock (ID # 89716)
Amy E. Hirakis (ID # 310094)
PPL Services Corporation
Two North Ninth Street
Allentown, PA 18101
Phone: 610-774-5696
Fax: 610-774-4102
E-mail: kklock@pplweb.com
aehirakis@pplweb.com

Devin T. Ryan (ID # 316602)
Garrett P. Lent (ID # 321566)
Post & Schell, P.C.
17 North Second Street, 12th Floor
Harrisburg, PA 17101-1601
Phone: 717-731-1970
Fax: 717-731-1985
E-mail:dryan@postschell.com
glent@postschell.com

Curtis S. Renner (DC ID # 446187)
Watson & Renner
1101 14th Street, NW
Suite 350 - ENS
Washington, DC 20005
(202) 737 6302
crenner@w-r.com

Date: March 6, 2018

Attorneys for PPL Electric Utilities Corporation

APPENDIX "A"

Exhibit List

Case # C-2017-2621285

Alan V. Schmukler vs PPL Electrical Utilities Corporation

Exhibit #	Description

1 Letters from 4 medical professionals attesting to my electromagnetic sensitivity (EMS)

1B Diagnosis of my phase-lag sleep disorder from National Institute of Health.

1C An explanation of phase-lag sleep disorder (delayed sleep phase disorder).

2 Correspondence with George Lechter CEO of Technology Alternatives.

2B Correspondence with Comcast re: shutting off WiFi and installation of hard wire.

3 My performance reports from Philadelphia Commission on Human Relations.

4 Article showing that electromagnetic sensitivity (EMS) is a disability under the ADA.

5 17 studies showing that electromagnetic fields reduce melatonin in people.

6 Article showing EMS is recognized by U.S. Agencies. Also court cases.

7 Research studies on EMS showing that electromagnetic fields cause sleep disturbance and cognitive dysfunction in EM sensitive people.

8 Article showing people in 30 countries have reported electromagnetic sensitivity.

9 Research showing that insomnia is the #1 symptom reported from exposure to Electromagnetic fields.

10 Doctor David O. Carpenter MD- letter to N.Y. State Public Service Commission.

11 Landmark research – U.S. National Toxicology Program study- 10 year, $25 million study on cell phone radiation.

12 A Coming Storm For Wireless- article by Gloria Vogel consultant for insurance industry.

13 International EMF scientist appeal to the U.N. warning of danger from non-ionizing radiation. 220 scientist from 41 nations.

14 Statement from the Board of the American Academy of Environmental Medicine.

15 Radiation expert Daniel Hirsch's report on smart meter radiation.

16 Bioinitiative report on electromagnetic radiation- 1800 studies on dangers of electromagnetic radiation.

17 International Agency for Research in Cancer of the World Health Organization- Electromagnetic radiation classified as 2B carcinogen.

18 Top experimental and epidemiological studies on dangers of non-ionizing radiation.

19 Doctor Leif Salford reports on cell phone radiation. Even low levels affect physiology.

20 Article on smart meter Switching-mode power supply and dirty electricity.

21 Fire hazards from smart meters.

22 Smart meter opt-out status in some states and munipalities.

23 A judge rules that opt-out fees levied on a disabled person was a violation.

24 10 points of the Nuremberg code.

Re: Alan V. Schmukler v. PPL Electric Utilities Corporation

Docket No. C-2017-2621285

Introduction

My name is Alan V. Schmukler. I am 72 years old and a graduate of Temple University (Summa cum laude, President's Scholar). My work experience includes four years in respiratory therapy at Einstein Hospital (Phila.) and four years as a hearing examiner and investigator for the Philadelphia Commission on Human Relations (PCHR). The last 27 years I've been teaching, consulting and writing about alternative medicine, and in particular, homeopathy. My book "Homeopathy – An A to Z Home Handbook" has been translated into five languages, and I'm recognized internationally as an expert in this subject. I'm currently volunteering my services as Chief Editor of the world's largest homeopathy website.

I'm presenting two classes of information in my complaint against PPL Electric. The first asserts that the type of RF radiation produced by so-called Smart Meters used by PPL Electric is harmful to me because I am electromagnetically sensitive. I've had this problem for 30 or more years. On exposure to electromagnetic fields, including RF fields produced by cell phones and smart meters, I develop a brutal insomnia. I also become mentally "foggy" finding it very difficult to concentrate.

On or about Aug 14, 2017 PPL had a "smart meter" installed on the house at 197 Strawberry St. in Leola PA, which shares a party wall with where I live (199 Strawberry St.). That meter is only inches from where my wife (partner of 19 years) and I live. Since shortly after the meter was installed, my chronic insomnia was severely exacerbated and I've been only able to sleep 2-3 hours a night. I've had days where I thought I might perish from fatigue. In this exhausted state I cannot digest food, wounds do not heal and work is near impossible. In desperation I tried shielding some walls of our house with aluminized plastic (mylar), tried sleeping in a mylar poncho and made a hat of aluminum foil. I also began sleeping in the room farthest from the smart meter. All of this provided minimal relief. The meter's microwave radiation is pulsed every 7-12 seconds and is inescapable.

Using a hand-held Comet ED88T radiation measuring device, I was able to see that the smart meter was emitting radiation every 7–12 seconds around the clock. That comes to over 86,000 pulses a day. The radiation levels varied, going from 5.8 **microwatts** / meter squared up to 0.18 **Watts** /meter squared, which was in the red

(caution) zone of the meter scale. One may debate the long term effects or safety of different levels of radiation, but for the electromagnetically sensitive, exposure to even lower levels produces symptoms that are immediate, profound and disruptive of life. An apt metaphor is peanut allergy. Peanuts are a common food item that many people enjoy. However, those who are allergic and sensitive to it can suffer a life threatening reaction to even a trace amount of it.

I present evidence today to show that electromagnetic sensitivity is a recognized medical disability (including the Americans with Disabilities Act (ADA) and that I have suffered from it for many years. Research will also show that exposure to electromagnetic fields reduces melatonin levels in people and animals. Melatonin is the mediator of the sleep/wake cycle and necessary for normal sleep. Research also reveals that insomnia is the number one symptom reported after exposure to electromagnetic fields.

The second part of my complaint asserts that electromagnetic fields such as are emitted by so-called smart meters, including the ones used by PPL Electric, are harmful to everyone. The RF radiation from these meters is similar in type to that produced by cell phones. However, there are two important differences. While cell phones expose one's head to microwave radiation, smart meters expose the entire body. Also, cell phones emit radiation only when turned on, but smart meters emit radiation 24 hours a day, 7 days a week. My presentation to this court will show that smart meters expose people to approximately 160 times the radiation of a cell phone. Note that the use of cell phones is voluntary, but PPL would have smart meters be mandatory.

The evidence will also show that there is a worldwide consensus among scientists who are NOT part of the wireless industry, that electromagnetic radiation (non-ionizing) such as emitted by smart meters, is a threat to health. It has been associated with cancer, neurological problems, leakage of the blood brain barrier, insomnia, concentration dysfunction, and more. In 2011, the world's leading experts from the International Agency For Research On Cancer (IARC) labeled microwave radiation a possible carcinogen. Since then many studies have verified the connection with cancer and other ailments. The court will also see a hard copy of the Bioinitiative Report 2012 (and updates to 2017) which was based on 1800 studies done by scientists independent of governments, and the wireless

industry, who found harmful effect from non-ionizing radiation.
(www.bioinitiative.org) http://bioinitiative.info/bioInitiativeReport2012.pdf
http://www.bioinitiative.org/research-summaries/

My exhibits will also show that 220 scientists from 41 nations appealed to the United Nations, warning of the dangers of non-ionizing radiation.

Also included in my exhibits is a report about the landmark 10 year, $25 million National Toxicology Program (NTP) study, which found a statistically significant increase in the incidence of *brain and heart cancer* in animals exposed to cell phone radiation at levels below the ICNIRP (International Commission on Non-Ionizing Radiation Protection) guidelines. The study shows that while the experimental animals developed these cancers, NONE of the controls (unexposed) animals developed those cancers. Another exhibit is a synopsis of research up to 2017 from the *Environmental Health Trust.* They list the top experimental and epidemiological studies showing harm from non-ionizing wireless radiation.

The defendant PPL Electric Utilities Corp. may cite the FCC to assert that non-ionizing radiation is harmless. However, Harvard University ethicists have described the FCC as a "captured agency dominated by the industries it presumably regulates." That article is available at this link.

https://ethics.harvard.edu/files/center-for-ethics/files/capturedagency_alster.pdf

Switching Mode Power Supply

Another source of radiation that threatens the occupants of houses with smart meters is due to the meters using a Switching Mode Power Supply. This results in high frequency transients called "dirty electricity" (50,000 to 70,000 volts /second) that are conducted along the wiring of the house. This creates an electromagnetic field which radiates from the house wiring into the house and can affect the occupants negatively, especially those who are electromagnetically sensitive.

Fire Hazard

Smart meters are a potential fire hazard. Since they have no circuit breaker or surge arrestor, during a power surge, they can produce electric arcing that can start fires. Articles included will show that the arcing in smart meters have resulted in numerous house fires in the U.S. and Canada requiring the replacement of thousands of meters. None of PPL's smart meters have circuit breakers or surge arrestors, nor do they carry the standard UL approval rating for electrical safety.

Insurance Industry Flees the Wireless Market

The court will also learn from my exhibits, (article by Gloria Vogel, consultant to the insurance industry), that all insurers have withdrawn from the wireless industry market, including Lloyds of London. They see too much liability due to the dangers of exposure to electromagnetic fields. This decision was made by insurance corporations whose primary skill is risk assessment.

While the defendant PPL Electric may deny or try to counter the arguments about the danger of non- ionizing electromagnetic radiation (including RF radiation) and provide opposing points of view, one cannot ignore the weight of evidence from hundreds of scientists around the world (at least 41 nations) who find non-ionizing RF radiation to be a health risk. I believe that **where there is risk, there must be choice.** All across the country, people are demanding the right to have that choice and opt- out of having smart meters.

My Request to PPL

I wish the court to consider that my request to PPL Electric is modest, considering the grief this meter is causing me. I am not here seeking monetary compensation, nor that PPL remove millions of smart meters. In short, I just want a little more distance from their product. I'm asking two things:

1. That due to my disability, I be permitted, without opt out fee, to keep the analog meter that is still on our house, works fine, emits no radiation and causes me no distress.

2. That PPL remove the smart meter from our neighbor's wall on 197 Strawberry st. (we share a common wall) and replace it with a genuine analog meter (no electronic parts), also without opt-out fee. RF radiation does not respect addresses

and the radiation from 197 Strawberry St. invades our house easily. It has caused me much distress these last eight months.

I would consider these requests to be reasonable accommodation for my disability. Note: If the defendant argues that they require the neighbor's consent to remove the smart meter, let me remind the court that the neighbor's consent was never sought when they placed the smart meter on her house. In fact, if she denied consent, they would have placed it there anyway (barring a court action by her).

I'm trying to return to my life as it was, and live out my remaining years as a productive member of society. I cannot do that under the present conditions.

Alan V. Schmukler

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 1

Description:
Letters from 3 medical doctors and one naturopath, attesting to my electromagnetic sensitivity.

This exhibit will show:
My electromagnetic sensitivity and it's profound negative effect on me.

This is important because:
This is the reason I cannot tolerate the "smart meter"radiation.

Penn Medicine
Lancaster General Health Physicians

Alan V Schmukler
199 Strawberry Street
LEOLA, PA 17540

1/9/2018

To whom it may concern:

Alan Schmukler has been a patient in my office since 3/4/2014. He has a long history of insomnia and was first diagnosed with phase lag sleep disorder at the NIH sleep lab many years ago. Around that same time, he was also diagnosed with electromagnetic sensitivity. Over the years he has been extremely sensitive to EMFs that are emitted by cell phones, smart meters, and other specific electronic devices. This type of exposure makes him physically sick with nausea, lack of mental focus, and marked worsening of his chronic sleep difficulties. These symptoms are severe enough that they have an adverse affect on his health and well being.

It is my medical opinion that secondary to his significant electromagnetic sensitivity, that he should strictly avoid exposure to such EMF sources to include smart meters and cell phones. Thank you for your attention to this matter.

Sincerely,

Michael J. McGee MD.

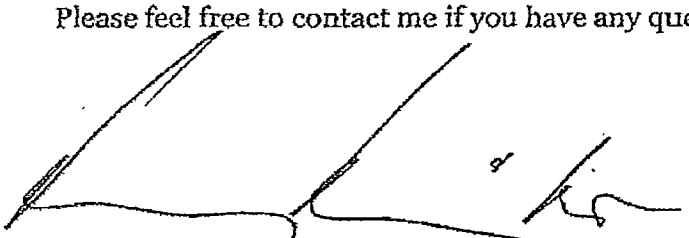
Family Medicine New Holland
676 East Main Street
New Holland PA 17557 • 717-354-4671 • 717-354-2478 Fax
www.LancasterGeneralHealth.org

HOMEOPATHIC ASSOCIATES
Manfred Mueller MA DHM RSHom(NA) CCH

To Whom It May Concern

Mr. Alan Schmukler has consulted me from 7-28-16 to present, for treatment of severe insomnia and electrosensitivity (sensitivity to electromagnetic fields), including from high frequency pulsed microwave emissions such as are associated with cell phones and smart meters. In his case, these radiations greatly exacerbate his insomnia (perhaps due to suppression of melatonin production). He may go for days, weeks or months without restful sleep. To get an idea how severe and disabling his condition is, when he held a cell phone and programmed it, he hardly slept for two weeks. When insomnia of this severity is exacerbated it can become life threatening, as it also interferes with basic life processes, including appetite, food intake, nutritional absorption, etc.

Please feel free to contact me if you have any questions,



Manfred Mueller, MA, DHM, RSHom(NA), CCH

office@homeopathicassociates.com

https://homeopathicassociates.com/

ASHA Homeopathy

Branch-1 : Near Gordhan Sky Mall, Khatipura Road, Jhotwara, Jaipur-12 • Ph.: 0141-2349009
Branch-2 : A-4/1, Ganesh Marg, Hawa Sadak, Civil Lines, Jaipur-19 • Ph.: 0141-2219009
Mob. : +91-8387909009 • website : www.ashahomeopathy.com • E-mail : manish@hpathy.com

Dr. Manish Bhatia
BHMS, M.Sc. (Hom) UK
Reg. No. 4320

Dr. (Mrs.) Manisha Bhatia
BHMS, MD (Hom), CIACH (Greece)
Reg. No. 4522

To whomsoever it may concern, this is to certify that I have treated Alan Schmukler for chronic insomnia which he's suffered from for some years. His insomnia is greatly exacerbated from exposure to electromagnetic fields, such as from cell phones, smart meters etc. His electromagnetic hypersensitivity (EHS) combined with the insomnia leaves him in a dangerously weakened state. This leads to digestive difficulty and weight loss. He needs to avoid exposure to emissions from smart meters, cell phones and WIFI modems. Where distance from such sources is the only remedy that should be the solution.

27/11/2017

Dr. Manish Bhatia

www.Homeopathy2health.com
Dr. Leela D'Souza Francisco, MD (Hom), CIH (Cardiology)
Consultant and Homeopathic Cardiologist

30.11.2017.

To, Whomsoever This May Concern:

I have treated Alan Schmukler for chronic insomnia which he suffered from for some years. His condition is made worse from exposure to electromagnetic fields, including radiofrequency fields emitted by smart meters, cell phones and wifi modems. On exposure to such fields, his insomnia becomes so severe as to constitute a serious threat to his health.

Sleep is a critical life function and necessary for the body to repair itself. He also loses mental aquity from exposure to such fields. Due to his electromagnetic hypersensitivity, it is necessary that he avoids proximity to smart meters, cell phones and other microwave sources to maintain his health.

Thank You,
Sincerely,

www.Homeopathy2health.com
Dr. Leela L'Souza Francisco, MD (Hom)
71, Chalet Gilda, Convent Avenue,
Santacruz (West), Mumbai 400 0[illegible].
Ph: 26492007, 26051423, Mob: 9920322776;
Email: leela@homeopathy2health.com

Reg No. 19125.

Clinic: Thurs/Sat By Appt.
71, Chalet Gilda, Convent Ave,
SantaCruz (West), Mumbai 54
Mob: **9920322776**
Online Consult: www.homeopathy2health.com

Holy Family Hospital and Heart Institute
Hill Rd. Bandra (West), Mumbai 50
Gen.OPD: Mon/Wed: 1.30 – 3.30 pm
Pvt.OPD: Mon/Tue/Wed/Fri By Appt.
Email: **leela@homeopathy2health.com**

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 1 B

Description:
A diagnosis of my sleep disorder from National Institute of Health (NIH) where I was a research subject from 1/12/81 to 2/25/81.

This exhibit will show:
I was diagnosed with phase lag sleep disorder (also known as delayed sleep phase disorder).

This is important because:
Phase lag sleep disorder is a disruption of the sleep/wake cycle. That cycle is controlled by melatonin, and melatonin levels are reduced by exposure to electromagnetic fields. This is probably the mechanism by which the smart meter severely aggravates my insomnia.

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

National Institutes of Health
Health Information Management Department
Medicolegal Section
10 Center Dr., MSC 1192
Building 10, Room 1N205
Bethesda, Maryland 20892-1192
(301) 496-3331
(888) 790-2133 (Toll Free)

November 28, 2017

Patient Reference ALAN V. SCHMUKLER
MRN: 14-59-36-3
DOB: 8/15/1945

Enclosures

Discharge Summary

Reference Dates

01/12/81 2/25/1981

Admitted on 2-18-81
Discharged on 2-25-81

SIGNIFICANT FINDINGS:

Laboratory: Blood chemistry was essentially normal. Hematology: Hemoglobin of 16.7 was recorded with an MCH of 32.0 and a PTT of 38.7, with a UIBC of 259. Further values were essentially normal.

HOSPITAL COURSE:

The patient's sleep and temperature were monitored on his new schedule, and he was discharged, and is to be followed up by Dr. Norman E. Rosenthal and Dr. Thomas A. Wehr.

OPERATIONS AND DATES PERFORMED:

None

FINAL DIAGNOSIS:

Phase Lag Sleep Disorder.

DISPOSITION:

To be followed as an outpatient by Dr Norman Rosenthal.

Sign & Date: NRosenthal 4/14/81
Norman E. Rosenthal, M.D./MH/4-7-81 (Dictated)
NER:mrc:10126 4-8-81 (Transcribed)

Sign & Date: Thomas Wehr M.D. 5/8/81
Senior (Attending) Physician

PATIENT IDENTIFICATION

Schmukler, Alan V. 14-59-36-3

SOH PE

2

THE CLINICAL CENTER
NATIONAL INSTITUTES OF HEALTH

- ☐ Operation Report (OP)
- ☐ History and Physical Examination (HPE)
- ☒ Discharge Summary (DS)
- ☐ DS Combined with HPE
- ☐ Interim Summary (IS)
- ☐ IS Combined with HPE
- ☐ Addendum Summary (AS)

NIH-999 (REV. 10-80)

Admitted on 1-12-81
Discharged on 1-23-81

HOSPITAL COURSE AND LABORATORY DATA:

The patient's blood chemistry was normal except for his cholesterol which was slightly reduced at 141 mg./dl. and his albumin slightly elevated at 5.0 gm./dl. Hematological indices were normal except for slightly elevated MCH at 32.8 and a slightly elevated MCHC at 36.2. An electrocardiogram performed on 1-14-81 indicated sinus arrhythmia with a high J-point elevation in II, III and F and over the precordium. No conclusions were drawn from this as there had been no previous electrocardiogram for comparison. Sleep and temperature were recorded on four days and were found to be markedly disturbed. The patient was unable to sleep before about 7 or 8 A.M. He was hypersomnic, sleeping up to 12 hours at a stretch with interruptions. His temperature fell throughout the day as he became increasingly fatigued and rose during the night, an inversion of the usual pattern. Course in the hospital was uncomplicated, and he was discharged at his request to attend to his business affairs and is to be readmitted for further studies.

OPERATIONS AND DATES PERFORMED:

Nil.

FINAL DIAGNOSIS:

Phase lag sleep disorder.

DISPOSITION:

Patient went back home to Philadelphia. He is to keep in contact with NIMH physicians by phone and is to return for continued evaluation and treatment.

Sign & Date: Norman Rosenthal, MD. 2-17-81
Norman E. Rosenthal, M.D./MH/1-28-81 (Dictated)
NER:mrc:10113 1-30-81 (Transcribed)

Sign & Date: Thomas K. Wehr M.D. 5-8-81
Senior (Attending) Physician

PATIENT IDENTIFICATION

Schmukler, Alan V. 14-59-36-3

- [ ] Operation Report (OP)
- [ ] History and Physical Examination (HPE)
- [x] Discharge Summary (DS)
- [ ] DS Combined with HPE
- [ ] Interim Summary (IS)
- [ ] IS Combined with HPE
- [ ] Addendum Summary (AS)

THE CLINICAL CENTER
NATIONAL INSTITUTES OF HEALTH

NIH-999 (REV. 10-80)

4

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 1 C

Description:
A explanation of delayed sleep phase disorder (DSPD).

This exhibit will show:
DSPD is linked to melatonin levels.

This is important because:
Melatonin levels are reduced in people exposed to electromagnetic fields, including RF fields from smart meters.

Sleep Med Clin. Author manuscript; available in PMC 2011 Dec 1.
Published in final edited form as:
Sleep Med Clin. 2010 Dec; 5(4): 701–715.
doi: 10.1016/j.jsmc.2010.08.001
PMCID: PMC3020104
NIHMSID: NIHMS229698

Therapeutics for Circadian Rhythm Sleep Disorders

Ehren R. Dodson, PhD and Phyllis C Zee, MD, PhD

Synopsis

The sleep-wake cycle is regulated by the interaction of endogenous circadian and homeostatic processes. The circadian system provides timing information for most physiological rhythms, including the sleep and wake cycle. In addition, the central circadian clock located in the suprachiasmatic nucleus of the hypothalamus has been shown to promote alertness during the day. Circadian rhythm sleep disorders arise when there is a misalignment between the timing of the endogenous circadian rhythms and the external environment or when there is dysfunction of the circadian clock or its entrainment pathways. **The primary synchronizing agents of the circadian system are light and melatonin.** Light is the strongest entraining agent of circadian rhythms and timed exposure to bright light is often used in the treatment of circadian rhythm sleep disorders. In addition, timed administration of melatonin, either alone or in combination with light therapy has been shown to be useful in the treatment of the following circadian rhythm sleep disorders: delayed sleep phase, advanced sleep phase, free-running, irregular sleep wake, jet lag and shift work.

Delayed Sleep Phase Disorder

Delayed sleep phase disorder (DSPD) is one of the most common of the circadian rhythms sleep disorders. Limited data suggests that the prevalence rate is about 1.7% in the general population [13] and 7% of those with insomnia complaints [7]. Onset of this disorder typically occurs during adolescence or early adulthood [11,14].

DSPD often presents as sleep-onset insomnia and/or excessive morning sleepiness associated with the chronic inability to fall asleep and wake up at socially acceptable times as required for work or school [11].

Waking in the early morning (i.e. 6-8 am) is very difficult for these patients, often requiring multiple alarms and the assistance of family members. DSPD patients report excessive sleepiness and impaired functioning in the morning, with marked improvement in alertness in the evening/night.

Exogenous melatonin is widely used as a pharmacological treatment and is recommended as either a guideline or option by the AASM Clinical Practice Parameters for the treatment of CRSDs. Melatonin is classified as a nutritional supplement and has been approved by FDA as a treatment for sleep disorders.

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 2

Description:
Correspondence with the George Lechter, CEO of Technology Alternatives Corp (latter renamed "Safe Technologies"). From whom I purchased a computer monitor that was shielded from electromagnetic fields.

This exhibit will show:
This shows that I had electromagnetic sensitivity as early as September 2007, and required a special shielded monitor.

This is important because:
It establishes a long term disability.

Subj: **Re: New Monitor**
Date: 9/21/2007 11:11:26 A.M. Pacific Daylight Time
From: mgauss@netrox.net
To: Alanheal@aol.com

You are welcome. Prices for 19" are now the same as 17" as the industry stopped making 17" units

George

On Sep 21, 2007, at 11:49 AM, Alanheal@aol.com wrote:

Hi George,

Thanks for getting back to me so quickly. It's such a relief to have a color monitor that I can use, after all these years! If you ever want an endorsement, let me know (author of Homeopathy An A to Z Home Handbook www.healgently.com). Thanks also for the upgrade to a 19".

My best
Alan

In a message dated 9/21/2007 8:25:43 A.M. Pacific Daylight Time, mgauss@netrox.net writes:

> Hi Alan
>
> I gave you a 19" for the price of the 17"
>
> Readings should be taken at 12 inches. If using a Trifield meter it is not a proper meter to read with (does not have proper filtering)
>
> Just play with the buttons they are for brightness, etc.
>
> 3 year warranty.
>
> No need to run the CD. .
>
> George Lechter
> Technology Alternatives Corp
> 1-800-222-3003

9/21/07

Yep Monitor

=

BUSINESS DIRECTORY
FLORIDA

http://www.florida-businessdirectory.com/company-safe-technologies-corporation_588228

Safe Technologies Corporation

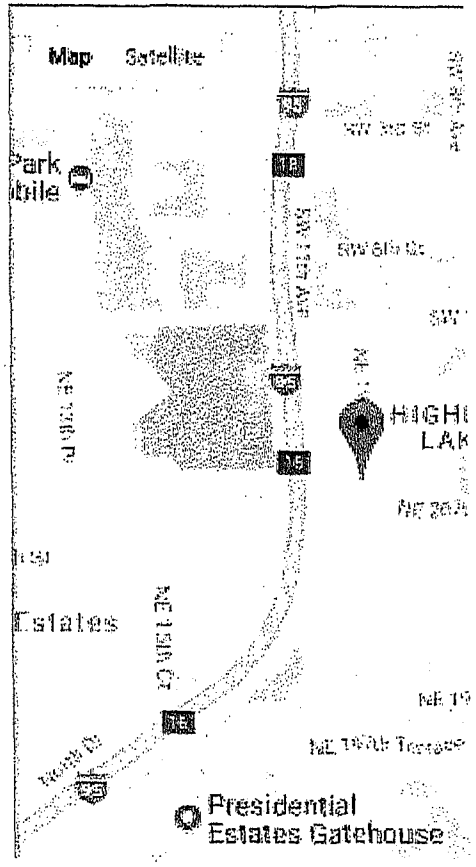
Tel: (305

Address: **1950 Ne 208th Ter**
City: **Miami, Miami-Dade, Florida, USA.**
Postal Code / Zip code: **33179-2265**
Phone Number: **(305) 933-2026**
Fax Number.
Website: Information not available.
Division: **Computer terminals.**
Services: Mfg Computer Monitors Without Radiation And Meter Reade.
Employees (Estimated): Unavailable

Update Information

Company Description:

Information not available.



Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 2B

Description:
Correspondence with Comcast regarding shutting off WIFI and installation of hard wire so WIFI would not be necessary.

This exhibit will show:
Both I and my wife requested work orders from Comcast showing that they installed a hard wire and shut off our WIFI on or about October 23, 2011.

*NOTE: A Comcast lawyer assumed that information was being used in some case against Comcast and refused to supply the information without a court order. I could not convince him otherwise.

This is important because:
This shows that I wanted no part of WIFI radiation and took measures to avoid it 6 years ago.

COMCAST

Legal Response Center
650 Centerton Road
Moorestown, NJ 08057
866-947-8572 Tel
866-947-5587 Fax

CONFIDENTIAL

December 11, 2017

VIA UPS DELIVERY
ALAN V. SCHMUKLER
199 STRAWBERRY ST.
LEOLA, PA 17540-2204

Re: Subscriber Request
Comcast File #: **887469**

Dear Alan V. Schmukler:

The Subscriber Request received on 12/8/2017 with respect to the above-referenced matter has been forwarded to the Legal Response Center for a reply. The Subscriber Request asks Comcast to produce certain subscriber account records pertaining to the following: **work orders associated with Comcast account at address 199 Strawberry St. Leola, PA 17540.**

Based on the information provided pursuant to the Subscriber Request, Comcast is unable to provide information at this time. The request must be signed by the primary account holder. As such, we are unable to provide the requested records until we receive a new request that has been signed by the primary account holder and we speak with him/her to verify the request.

In addition, a Court Order that complies with Section 631 of the Cable Communications Policy Act of 1984, 47 U.S.C. § 551 is required in order for Comcast to release information on this account.

If you need further assistance, or if you have any questions regarding this matter, please feel free to call 866-947-8572.

Very Truly Yours,

Comcast Legal Response Center

Attn: Comcast

Alan V. Schmukler

199 Strawberry St.

Leola PA 17540

717-556-8484

Alanheal@aol.com

12-8-2017

Greetings,

When we moved into our house in Leola, we requested Comcast install a hard-wire connection to our computers, so we could shut off the wifi. On October 23, 2011, Comcast sent someone to hardwire our house.

We requested that all the Wifi be shut off. Comcast shut of the 2.5 wifi but not the 5 wifi. When we realized this some months later we requested the 5 wifi be shut also.

I'm requesting:

1. Copies of the work order showing the hardwire was installed, including the date.

2. Copies of any notes from phone conversations we had with Comcast, showing that we called Comcast and requested that the wifi to be shut off.

I need that information as soon as possible. That's it!

Thank you

Alan V. Schmukler

Alan V. Schmukler

Janice Zalewski

199 Strawberry St.

Leola, PA 17540

COMCAST

FAX 866-947-5587

Comcast LRC

650 Centerton R.

Moorestown, N.J.

08057

Attn: Custodian of Records

Please provide any and all work orders for Oct 23, 2011 for the account of Janice Zalewski, 199 Strawberry St., Leola PA, 17540. We're interested in the work order for the installation of a hard wire connection and the shutting off of the WIFI. If you don't have the Oct 23, 2011 work order, could you please check for our earliest requests that the WIFI be shut off?

If you any questions or need more information, don't hesitate to call at :

717-556-8484

Thank you

Janice Zalewski

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 3

Description:
This is the performance report from my work as an investigator and hearing examiner for the Philadelphia Commission on Human Relations 1987 through 1991.

This exhibit will show:
This shows that I received exemplary evaluations until 1991 when I requested a medical exemption from working on computers. My attempts on them had worsened my insomnia and caused difficulty concentrating.

This is important because:
This establishes my electromagnetic sensitivity as early as 1991.

***Note:** Technically it would have been much easier for me to do my work on a computer rather than a manual typewriter. But because of my sensitivity to the field around the monitor, I could not use it. (These were the old type monitors).

***Note:** Although the report states that I refused to use the computer, I did try repeatedly but became mentally foggy and my insomnia got worse. Also, I was surrounded by other people's computers only inches away from my cloth cubicle.

CITY OF PHILADELPHIA

COMMISSION ON HUMAN RELATIONS
601 City Hall Annex, Philadelphia, Pa. 19107
Telephone: (215) 686-4670

LEAH GASKIN WHITE, ED.D.
Executive Director

Thomas J. Ritter, Chairperson

June 15, 1989

Mr. Alan Schmukler
Philadelphia Commission on Human Relations
Room 614, City Hall Annex
Philadelphia, Pennsylvania 19107

Dear Alan:

As we approach the end of Fiscal Year 1989, and look back on the many accomplishments made by our agency during this period, it is personally gratifying to share with you our appreciation for your contribution to a year of growth and progress.

You are an exceptional employee. You have excellent analytical abilities, which have been demonstrated in several difficult cases, and are one of the hardest working employees in this agency. Within the past year, you have brought the Wagmiller vs. Hershey case to a successful conclusion.

Thank you for another good year. We look forward to your cooperation and support as we take on the challenges of the coming year.

Sincerely,

Thomas J. Ritter
Chairperson

Leah Gaskin White, Ed.D.
Executive Director

cc: Personnel File

CITY OF PHILADELPHIA

PERFORMANCE REPORT FOR PERMANENT EMPLOYEE

FOR PERSONNEL DEPARTMENT

RECEIVED	POSTED
19	19

☐ SPECIAL ☒ ANNUAL

NAME (Last)	(First)	(Initial)	PAYROLL NUMBER
SCHMUKLER	ALAN	V	195830

CITY DEPARTMENT	DEPARTMENT NO.	ANNUAL RATE	INCR. DATE MO. DAY	TYPE APPT.	DEPT. APPT. MO. YR.	DATE OF REPORT
HUMAN RELATIONS	54AA870100	28,359	07 27	10	07 87	01 02 90

L SERVICE TITLE	CLASS CODE	RANGE	STEP	ORIGINAL APPT. MO. DAY YEAR
HUMN REL REP 2	5E34	EP19	2	07 27 87

COMMENTS TO EMPLOYEE

Supervisor should include examples of work especially well done and suggestions as to how work performance can be improved; factor ratings of Unacceptable or over-all ratings of Outstanding, Superior, Improvement needed, or Unacceptable must be substantiated. (Use additional sheets if more space is needed.) Your overal job performance in the past year has been Oustanding. You have demonstrated in your closings and in oral discussions about cases an outstanding analytical ability and understanding of issues. Your written work shows a logical progression of information and conclusions and is far above average in composition and thought. In your handling of difficult cases you have demonstrated outstanding abilities. You closed 64 cases in 1989, which is an average of better than 5 case closings per month. This is a superior rate of case closings.

GOOD LUCK ON YOUR NEW JOB AND KEEP UP THE GOOD WORK!

For your information I have summarized my best judgment of how well you have performed the duties of your position during the period covered since your last report. *A duplicate copy of this report is being forwarded to the Personnel Department.*

	PERFORMANCE FACTORS	UNACCEPTABLE	IMPROVEMENT NEEDED	SATISFACTORY	SUPERIOR	OUTSTANDING
	RATINGS ARE INDICATED BY "X" MARKS					
1	**QUALITY OF WORK** – Accuracy; precision; completeness; neatness. (Quantity not considered.)					X
2	**QUANTITY OF WORK** – Amount of work turned out. (Quality not considered.)				X	
3	**WORK HABITS** – Organization of work; care of equipment; safety considerations; promptness; industry.					X
4	**RELATIONSHIP WITH PEOPLE** – Ability to get along with others; effectiveness in dealing with the public, other employees, patients or inmates.					X
5	**INITIATIVE** – Self reliance; resourcefulness; willingness and ability to accept and carry out responsibility.					X
6	**DEPENDABILITY** – Degree to which employee can be relied upon to work and to meet deadlines without close supervision.					X
7	**ANALYTICAL ABILITY** – Thoroughness and accuracy of analysis of data, facts, laws and rules.					X
8	**ABILITY AS SUPERVISOR** – Proficiency in training employees, in planning, organizing, laying out and getting out work; leadership.					
9	**ADMINISTRATIVE ABILITY** – Promptness of action; soundness of decision; application of good management principles.					
10	**FACTORS NOT LISTED ABOVE:** (Use additional sheets, if needed.)					
	OVER-ALL RATING: Must be consistent with the factor ratings, but there is no prescribed formula for computing the over-all rating.	UNACCEPTABLE	IMPROVEMENT NEEDED	SATISFACTORY	SUPERIOR	OUTSTANDING X

SIGNATURE OF RATER	TITLE	DATE
Robert V. Rabe	Supervisor	1-22-90

I WOULD LIKE TO DISCUSS THIS REPORT WITH THE REVIEWING OFFICER.

IN SIGNING THIS REPORT I DO NOT NECESSARILY AGREE WITH THE CONCLUSIONS OF THE RATER

Signature of Employee Alan V. Schmukler *Date* 1/31/90

AS REQUESTED, REVIEWING OFFICER DISCUSSED REPORT WITH EMPLOYEE ON *(Date)*

I CONCUR IN THE RATINGS GIVEN BY THE RATER. I HAVE MADE NO CHANGE IN THE REPORT

Signature of Reviewing Officer [signature] *Date* 1/31/90

73-28 (Rev. 10/68)

ORIGINAL-EMPLOYEE

PERFORMANCE REPORT FOR PERMANENT EMPLOYEE

RECEIVED	POSTED
19	19

NAME (Last)	(First)	(Initial)	PAYROLL NUMBER	☐ SPECIAL	☒ ANNUAL
SCHUKLER	ALAN	V	195840		

CITY DEPARTMENT	DEPARTMENT NO.	ANNUAL RATE	INCR. DATE MO. DAY	TYPE APPT.	DEPT. APPT. MO. YR.	DATE OF REPOR
HUMAN RELATIONS	54AA8701					3/01/91

CIVIL SERVICE TITLE	CLASS CODE	RANGE	STEP	ORIGINAL APPT. MO. DAY YEAR
HUMN REL REP 2	5E34			

COMMENTS TO EMPLOYEE

Supervisor should include examples of work especially well done and suggestions as to how work performance can be improved; factor ratings of Unacceptable or over-all ratings of Outstanding, Superior, Improvement needed, or Unacceptable must be substantiated. (Use additional sheets if more space is needed.) Alan, you have completed your first year in the Housing Unit and you have earned an overall rating of Superior. Your main responsibility has been to investigate Housing cases, those resulting from the Testing Program, dual-filed HUD Complaints and others. It is a pleasure to be able to assign you cases and know that I can depend on you taking responsibility to complete them in a timely manner without close supervision. You have done an outstanding job in closing the dual-filed HUD Complaints all within 100 days of their docketing.

When the Housing Unit was directed to move to the North Philadelphia Field Office in the Spring of 1990 for a few months, you requested of Dr. White, a medical exemption from going. You were granted your request, in part due to the fact that you had an unusually high number of times you were leaving work early to attend various doctors' appointments in Center City. I supported that decision. In 1990 you left work early 31 times to attend doctors' appointments. You were out sick 35

For your information I have summarized my best judgment of how well you have performed the duties of your position during the period covered since your last report. *A duplicate copy of this report is being forwarded to the Personnel Department.*

PERFORMANCE FACTORS	UNACCEPTABLE	IMPROVEMENT NEEDED	SATISFACTORY	SUPERIOR	OUTSTANDING
	RATINGS ARE INDICATED BY "X" MARKS				
1 QUALITY OF WORK – Accuracy; precision; completeness; neatness. (Quantity not considered.)				X	
2 QUANTITY OF WORK – Amount of work turned out. (Quality not considered.)					X
3 WORK HABITS – Organization of work; care of equipment; safety considerations; promptness; industry.				X	
4 RELATIONSHIP WITH PEOPLE – Ability to get along with others; effectiveness in dealing with the public, other employees, patients or inmates.		X			
5 INITIATIVE – Self reliance; resourcefulness; willingness and ability to accept and carry out responsibility.					X
6 DEPENDABILITY – Degree to which employee can be relied upon to work and to meet deadlines without close supervision.					X
7 ANALYTICAL ABILITY – Thoroughness and accuracy of analysis of data, facts, laws and rules.				X	
8 ABILITY AS SUPERVISOR – Proficiency in training employees, in planning, organizing, laying out and getting out work; leadership.					
9 ADMINISTRATIVE ABILITY – Promptness of action; soundness of decision; application of good management principles.					
10 FACTORS NOT LISTED ABOVE: (Use additional sheets, if needed.)					
OVER-ALL RATING: Must be consistent with the factor ratings, but there is no prescribed formula for computing the over-all rating.	UNACCEPTABLE	IMPROVEMENT NEEDED	SATISFACTORY	SUPERIOR	OUTSTANDING
				X	

SIGNATURE OF RATER	TITLE	DATE
Rachel Lawton	Supervisor	4/16/91

☐ I WOULD LIKE TO DISCUSS THIS REPORT WITH THE REVIEWING OFFICER.

IN SIGNING THIS REPORT I DO NOT NECESSARILY AGREE WITH THE CONCLUSIONS OF THE RATER

Signature of Employee _____ *Date* _____

AS REQUESTED, REVIEWING OFFICER DISCUSSED REPORT WITH EMPLOYEE ON *(Date)* _____

I CONCUR IN THE RATINGS GIVEN BY THE RATER. I HAVE MADE NO CHANGE IN THE REPORT

Signature of Reviewing Officer _____ *Date* 4/16/91

73-28 (Rev. 10/68)

ORIGINAL—EMPLOYEE

days. From 1/1/91 - 2/24/91 there were 7 occasions you left early for doctors appointments and you were absent 8 times due to illness.

With the PCHR Directive that all Compliance Reps were to be trained in computers and to use the computers on their desks, you asked for a medical exemption from this duty. You were instructed that with regard to this request, you were expected to comply with the Directive until the City's Employee Health Services made a medical evaluation of this request. You continued to refuse to use computers or complete computer-training which, prior to such a determination, resulted in a 1/11/91 memo and written warning 2/26/91. It has been stressful for me to supervise you through these past many months because of this computer issue. You have treated me in a hostile and antagonistic manner over it on many occasions. This resulted in your Improvement Needed rating in the "Relationship with People" category. You otherwise would have gotten a higher rating in this category.

With the exception of the above, you have become an extremely valuable part of the Housing Unit. I can give you any assignment and feel confid that you will do a thorough and professional job with it. With few people in the Housing Unit to carry the load, I really need someone like yourself to depend on. I commend you for your personal commitment to excellence on the work you do.

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 4

Description:
Article stating that electromagnetic sensitivity is recognized as a disability under the ADA (American's With Disabilities Act).

This exhibit will show:

This is important because:
This establishes that EM sensitivity is a disability and therefore requires reasonable accommodation.

Recognition of the Electromagnetic Sensitivity as a Disability Under the ADA

The Architectural and Transportation Barriers Compliance Board (Access Board) is the Federal agency devoted to the accessibility for people with disabilities. The Access Board is responsible for developing and maintaining accessibility guidelines to ensure that newly constructed and altered buildings and facilities covered by the Americans with Disabilities Act and the Architectural Barriers Act are accessible to and usable by people with disabilities. In November 1999, the Access Board issued a proposed rule to revise and update its accessibility guidelines. During the public comment period on the proposed rule, the Access Board received approximately 600 comments from individuals with multiple chemical sensitivities (MCS) and electromagnetic sensitivities (EMS).

The Board has taken the commentary very seriously and acted upon it. As stated in the Background for its Final Rule Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Recreation Facilities that was published in September 2002:

"The Board recognizes that multiple chemical sensitivities and electromagnetic sensitivities may be considered disabilities under the ADA if they so severely impair the neurological, respiratory or other functions of an individual that it substantially limits one or more of the individual's major life activities. The Board plans to closely examine the needs of this population, and undertake activities that address accessibility issues for these individuals".

Following its recognition of electro sensitivity and its declaration of commitment to attend to the needs of the electromagnetic sensitive, the Access Board contracted the National Institute of Building Sciences (NIBS) to examine how to accommodate the needs of the electro sensitive in federally funded buildings. In 2005 the NIBS issued a report.

http://web.archive.org/web/20060714175343/ieq.nibs.org/ieq_project.pdf

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 5

Description:
Here are 17 studies showing that electromagnetic fields including RF fields as are emitted by smart meters, reduce melatonin in people.

This exhibit will show:

This is important because:
Smart meter radiation will reduce melatonin which is required for normal sleep. I am asserting that the smart meter is negatively affecting my sleep.

Neil.Cherry@ecan.govt.nz - © Dr Neil Cherry 2002-2005 Human Sciences Department - P.O. Box 84 - Lincoln University - Canterbury, New Zealand

EMR Reduces Melatonin in People

Dr Neil Cherry

Seventeen studies show that ELF and RF/MW exposure reduces melatonin and enhances serotonin in people. Evidence that EMR reduced melatonin in human beings commenced with **Wang (1989) who found that workers who were more highly exposed to RF/MW had a dose-response increase in serotonin, and hence indicates a dose-response reduction in melatonin.** Sixteen studies have observed significant EMR associated melatonin reduction in humans. They involve a wide range of exposure situations. This includes 16.7 Hz fields, Pfluger et al. (1996); 50/60 Hz fields, Wilson et al. (1990), Graham et al. (1994), Wood et al. (1998), Karasek et al. (1998), Burch et al. (1997, 1998, 1999a, 2000), Juutilainen et al. (2000) and Graham et al. (2000); combi nation of 60 Hz fields **and cell phone use**, Burch et al. (1997,1999a); VDTs ELF/RF exposures, Arnetz et al. (1996), and a combination of occupational 60Hz expo sure and increased geomagnetic activity around 30nT, Burch et al. (1999b).

Two recent studies recorded significant melatonin reduction in women in EMF residential exposure situations, Davis et al. (2002) and Levallois et al. (2002). The Davis (1997) study involved residential exposures and observed nocturnal reductions in melatonin metabolite, 6-OHMS. The author states that while the effect was small it occurred at milliGauss levels and followed a dose-response trend. The effect was strongest among women who were on medication that also reduces melatonin. They showed a significant dose-response trend, with a 2-, 3- and 4-fold increase in magnetic field resulting in 8%, 12 % and 15 % reductions in melatonin, respectively.

The eighteenth human melatonin reduction study is from MHz SW RF exposure as reported during the shutting down process of the Schwarzenburg shortwave radio. Urinary melatonin levels were monitored prior to and following the closing down

of the Schwarzenburg short wave radio transmitter. This showed a significant rise in melatonin after the signal was turned off.

Professor Russell Reiter, one of the world's leading medical researchers into the effects of melatonin, summarizes melatonin's roles, (Reiter and Robinson 1995), as being:

• **Vital for healthy sleep**, including lowering the body temperature, and assisting in maintaining health sleep states. • Reduces cholesterol, with consequent reductions in risk of atherosclerosis and coronary heart disease. • Reduces blood pressure and the tendency fo r blood clots, and hence reduces the risk of strokes. • Scavenger of free radicals.

Sleep disturbance as a melatonin reduction bioindicator:

It is well-established that the brain is a sensitive electromagnetic organ. One of the most dominant activities is the daily awake/ sleep cycle. Melatonin is one of primary regulators of the cycle. Therefor one of the primary methods for a non-invasive melatonin tracker is sleep disturbance.

Sleep Disturbance near a Shortwave Radio Tower, Schwarzenburg, Switzerland:

The Schwarzenburg Study, Alpeter et al. (1995) and Abelin (1999) **found a causal relationship of sleep disturbance with exposure to a short-wave radio signal. The effect is assessed as causal because of the significant dose-response relationship,** the variation of sleep disturbance in two experiments, one involving changing the beams and one turning the transmitter off, **and the identification of significant melatonin reduction.** Professor Abelin told seminars in Christchurch that **they had measured a significant increase in melatonin after the tower transmission was turned off** permanently, compared to the levels measured while it was on.

Excerpted from: EMF/EMR Reduces Melatonin in Animals and People -2002

http://www.neilcherry.nz/documents/90_b1_EMR_Reduces_Melatonin_in_Animals_and_People.pdf

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 6

Description:
Electromagnetic sensitivity is recognized by various US agencies. Also, court cases resolved in favor of EM sensitive individuals in the US and around the world.

This exhibit will show:
Government support for EM sensitivity and legal precedents.

This is important because:
Further legitimizes EM sensitivity under the law.

ES recognized legally as a 'functional impairment' and 'disability'

International Recognition of ES:

Legal awards, cases, laws and recognition of/for ES and EHS: examples:

- **USA:** "Judge rules electric co-op violated discrimination laws" (Plumas County News, May 4th 2015, where a utility was required to restore an analog meter for an EHS customer and not to discriminate against the EHS customer in setting higher charges for installation or reading the meter)

- **US American Disability Access Board:** MCS and EHS (General Issues: "The Board recognizes that multiple chemical sensitivities and electromagnetic sensitivities may be considered disabilities under the ADA if they so severely impair the neurological, respiratory or other functions of an individual that it substantially limits one or more of the individual's major life activities. The Board plans to closely examine the needs of this population, and undertake activities that address accessibility issues for these individuals. The Board plans to develop technical assistance materials on best practices for accommodating individuals with multiple chemical sensitivities and electromagnetic sensitivities.")

- **US American Disability Access Board:**Report (Background: Final Rule Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Recreation Facilities, 2000, page 11: Electromagnetic Fields: "For people who are electromagnetically sensitive, the presence of cell phones and towers, portable telephones, computers, fluorescent lighting, unshielded transformers and wiring, battery re-chargers, wireless devices, security and scanning equipment, microwave ovens, electric ranges and numerous other electrical appliances can make a building inaccessible. The National Institute for Occupational Safety and Health (NIOSH) notes that scientific studies have raised questions about the possible health effects of EMF's. NIOSH recommends the following measures for those wanting to reduce EMF exposure – informing workers and employers about possible hazards of magnetic fields, increasing workers' distance from EMF sources, using low-EMF designs wherever possible (e.g., for layout of office power supplies), and reducing EMF exposure times.")
- **USA:** Antoinette Yannon wins claim for late husband Samuel Yannon (1982, following illness and later death because of exposure to microwave transmitters)

• **USA:** "Causal. Legally Recognized Proof of the Damage Potential of Technical Highfrequency Fields - a Case Report" (Eger H,Umwelt-medizin-gesellschaft, 2014, 27(3): 176-181: When a US-American patient moved to Bavaria in 2006 and he was sensitised by nocturnal High Frequency radiation, he had to move away in 2007, but although he improved he was unable to work subsequently because of the ever higher environmental exposures. The court ackowledged his ES in 2012 and he was granted apension back-dated to 2008.)

• **USA:**"Court rules for Berkeley in cellphone right to know case" (Berkeleyside, September 22 2015: Federal district judge Edward Chen ruled in favor of the City of Berkeley's cellphone 'right to know' ordinance against a First Amendment rights challenge by the CTIA; Preliminary Judgement)

• **USA:** Indoor Environmental Quality (National Institute of Building Sciences, with Access Board, 2005, p.47f)

• **USA:** "Health Hazard Evaluation Report: Nonionizing Radiation Exposure to Technicians at a Satellite Communications Facility" (HETA 2007-0085-3062, National Institute for Occupational Health & Safety (NIOSH), 2008, p.10)

• **USA:** "Hypersensitivity to WiFi ... could it be a disability?" (Alexis Kramer, Bloomberg BNA Legal, September 10 2015)

• **USA:** LAUSD accommodates ES teacher (Los Angeles Unified School Board provides WiFi-free environment without radiation for Mrs Anura Lawson, a teacher made electrically sensitive by the school WiFi installation earlier in the year, 2014)

Susan Foster: "Americans with Disabilities Act Title II Evaluation of Electromagnetic Sensitivities (EHS) & Accommodations" (letter to Superintendent Michelle King, Los Angeles Unified School District, July 5 2017)

• **USA:** "Legal Implications of the Soviet Microwave Bombardment of the U.S. Embassy" (Larry B. Guthrie, Boston College International and Comparative Law Review, 1:1, 1977)

• **USA:** "Massachusetts: Wi-Fi in School : ADA Federal Complaint Against School After Child Fell Sick From Wireless Installation" (Towards Better Health, August 14 2015); Complaint (August 12 2015); Scott O'Connell: "Family sues Fay

School in Southboro, claims Wi-Fi made son ill" (Worcester Telegram & Gazette, August 24 2015) WCVB: "Preliminary agreement reached in Southborough Wi-Fi lawsuit" (August 27 2015); Scott O'Connell: "Wi-Fi lawsuit against Southboro's Fay School is headed to trial" (Telegram, January 18 2016); Q&A interview with mother; Beth: "Fay accused of retaliating against family suing school" (My Southborough, March 11 2016).

- **USA:** California state legislature recognizes people with electromagnetic sensitivities as disabled:

"Since May 2017, the California Legislature has provided ADA accommodation for people disabled by electromagnetic sensitivities (EMS). This is the first California legislative session to acknowledge EMS and to arrange accommodation and access for the EMF-disabled so that they can participate at hearings.
On Wednesday, July 12 2017, California Assembly leaders provided the most extensive accommodation to date at a hearing on Senate Bill 649 (Hueso). Assembly Communications and Conveyance Committee Chairman Miguel Santiago said, "The Assembly's Americans with Disabilities Act coordinator has received multiple requests for accommodation from individuals wishing to participate in this hearing," and "in an attempt to accommodate as many individuals as possible," the committee a) made a special order of business with a "time certain" for the SB 649 hearing, so those with EMS could arrive for the hearing and then leave, reducing their EMF exposure b) provided remote telephone access for those too disabled by the indoor air quality to testify in person, and c) made a request to the audience to turn off the wireless on their cell phones or put them in airplane mode "as a courtesy to the electromagnetically sensitive."
(Smart Meter Harm, September 15, 2017)

Evidence for, and recognition of, ES and EHS as a 'functional impairment' and 'disability'

- Lindsey D'Agnolo: "Are "Wi-Fi Allergies" an Impairment Covered by the ADA?" (The National Law Review, June 21 2017)

International Recognition of ES:

Australia; Dr McDonald and Comcare, AATA 105 (February 28th 2013; scientist won 75% of salary when he was unable to work because his employer failed to protect him from radiation although he had been diagnosed with EHS)

Australia:"Parent's success in stopping WiFI installation at Australian school" (EMFacts, November 5 2015, about a school which installed wired internet access to provide equal opportunity to a child disabled by electrosensitivity).

Canada: "The Medical Perspective on Environmental Sensitivities" (Margaret Sears, Canadian Human Rights Commission, 2007, recognising MCS and ES)

Canada: "Électrohypersensibilité à l'école : une mère devant les tribunaux" (André Fauteux, La Maison du 21 Siècle, September 10 2015, on a Montreal lawyer whose children suffer EHS symptoms from WiFi in school, who is suing la Direction de la santé publique (DSP) and the Quebec government for refusing to give her and her three children reasonable accommodations due to EHS; she filed her complaint with the Quebec Commission on Human Rights and Youth Rights on August 28 2015 and has also instituted proceedings in the Superior Court, on the grounds that "The DSP violates Canadian law on human rights".)

France: ES recognised as a disability with financial assistance for shielding and measuring equipment awarded by the MDPH of Essone for a technician in a chemical laboratory who had been on sick leave since 2011 (2014)

France: "French woman wins disability grant for 'gadget allergy'" (AFP, Expatica, August 26 2015: the applicant, Marine Richard, 39, a former radio documentary producer, hailed the ruling as a "breakthrough" for people afflicted by Electromagnetic Hypersensitivity (EHS). Richard lives in the mountains of southwest France, in a renovated barn without electricity, and drinking water from the well. A court in Toulouse decided she can claim a disability allowance of about 800 euros ($912) per month for 3 years. Her lawyer Alice Terrasse said the ruling could set a legal precedent for "thousands of people". BBC News: "Gadget 'allergy': French woman wins disability grant" (August 27 2015)

France: "Sobriété de l'éxposition aux champs électromagnétiques, information et concertation lors de l'implantation d'installations radioélectriques" (pdf; Number 2065, Assemblée Nationale, January 29 2015: a law banning WiFi in nurseries and restricting it in some other schools, and requiring a report on EHS within a year)

France: French High Court bans wireless smart meter for EHS: The Judge of the Appeals of the High Court of First Instance of Grenoble, in a decision of September 20 2017, forbid ENEDIS SA to install a "Linky" wireless smart meter in the home of a couple owners who refused. Mr and Mrs F., domiciled in MEYLAN (Isère), had informed ENEDIS that they refused the installation of a wireless electric meter at their home, especially given the fact that their son was Electro-Hyper-Sensitive (EHS) and that the Linky meter would cause a disturbance to the health of their son. (Next-up News, September 23 2017)

South Africa: "First Officially Recognized Case of the Functional Impairment EHS" (Lauraine Vivian & Olle Johansson, Comment, BMJ Open, 2013)

Spain: Teacher awared 100% of salary (The Spanish Labour Court of Madrid recognised the permanent incapacity of a college professor who suffered from CFS and environmental EHS and awarded 100% of the base salary, 2011).

Spain: FM, MCS and ES recognised as permanent disability in Spain: At Social Court, Number 4, in Castellón, for the first time in Spain, permanent disability has been recognized as a great disability in a patient afflicted with fibromyalgia (FM), multiple chemical sensitivity (MCS) and electrosensitivity (ES). Ruben had to sell his house and move home to a place in the mountains, only accompanied by Rosalina, his wife, who assists him and who can now also benefit from a help. ("Es el fin a cuatro años de calvario, enfermo y aislado en Betxí" El Periódico Mediterráneo, March 1 2017)

Spain: Support plan for people with EHS (July 1 2016, Tarragona Municipality Government: for people with Central Sensitivity Syndromes (CSS) which includes ES and EHS, especially: "Housing protocol for people with CSS, especially those who have MCS and/or EHS, those threatened by eviction or those who are forced to leave their home. This protocol has to include a series of safe social housing (green/white spaces: free of xenobiotics and electromagnetic waves). Create green/white spaces in all municipal buildings (free of xenobiotics and electromagnetic waves).)

Spain:"A telecoms engineer with electrosensitivity is awarded disability benefits because of his inability to work in WiFi areas" (Ana Macpherson, Lavanguardia, August 2 2016, where the High Court in Madrid awarded disability benefit to Ricardo de Francesco, a 47-year-old telecoms engineer with Ericsson, who suffers tinnitus, headaches and sleeplessness from cellphones. This overturns refusal of the

National Institution of Social Security (INSS) which in 2014 denied disability benefits on the grounds that there was then insufficient medical evidence.)

Patricia Esteban: "Spain: High Court of Madrid Ruling Recognizes "Electrosensitivity" as Grounds for Total Permanent Disability" (noticias.juridicas.com, August 3 2016)

Sweden: Specific recognition of EHS as a functional impairment (Olle Johansson)

Taiwan: "Lawsuit Against Spread of Illegal Installation of Mobile Phone Base Stations" (2011: the plaintiff suffered a 3-year exposure, close to the EM radiation source, which might cause mental illness, and carcinogenic body diseases, especially for those who are new-born infants and the elderly staying home for nearly 24 hours a day, and causing the plaintiff's mental discomfort and therefore a compensation of $100 thousands NT per person was to be paid by defendants, according to the Paragraph 1 of Article 184 of the Civil Code, the provisions of Article 195)

Taiwan:"Does YOUR toddler play on an iPad? Taiwan makes it ILLEGAL for parents to let children under two use electronic gadgets... and under-18s must limit use to 'reasonable' lengths" (Daily Mail, January 28 2015)

UK: Employment and Support Allowance awarded (Documnent ref. no.: 171) (Under the Social Entitlement Chamber, ESA Regulation 29, Exceptional Circumstances, 2b: "the claimant suffers from some specific disease or bodily or mental disablement"; the Judge stated: "Were it not for the EMR the appellant would lead a normal life with little or no functional impairment ... Considerations included the fact that the appellant would be unable to work in any 'normal' working environment indoors or outdoors - anywhere there was WiFi, mobile phones or mobile phone masts ... Taken together the prospects of the appellant being able to 'work' ... were effectively nil." 2012)

http://www.electrosensitivity.co/legal.html

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 7

Description:
Research studies into EM sensitivity.

This exhibit will show:
This shows that EM fields can trigger both sleep disturbances and cognitive dysfunction in EM sensitive people.

This is important because:
I am asserting that smart meter radiation is worsening my insomnia and causing difficulty concentrating.

Research Studies into Electrical Sensitivity

http://es-uk.info/research.html

The following is a brief summary of the research that has found positive associations between the suspected electromagnetic causes and the symptoms of those with Electrical Sensitivity, in reverse date order:

McCarty DE *et al*, (July 2011) *Electromagnetic hypersensitivity: evidence for a novel neurological syndrome*, Int J Neurosci. 2011 Jul 28. [View on Pubmed]
"EMF hypersensitivity can occur as a bona fide environmentally-inducible neurological syndrome"

Landgrebe M *et al*, (March 2008) *Cognitive and neurobiological alterations in electromagnetic hypersensitive patients: results of a case-control study*, Psychol Med. 2008 Mar 26;:1-11 [View on Pubmed]
"These results demonstrate significant cognitive and neurobiological alterations pointing to a higher genuine individual vulnerability of electromagnetic hypersensitive patients"

Karinen A *et al*, (February 2008) *Mobile phone radiation might alter protein expression in human skin*, BMC Genomics. 2008 Feb 11;9:77 [View on Pubmed]
"This is the first study showing that molecular level changes might take place in human volunteers in response to exposure to RF-EMF. Our study confirms that proteomics screening approach can identify protein targets of RF-EMF in human volunteers."

Arnetz BB *et al*, (2007) *The Effects of 884 MHz GSM Wireless Communication Signals on Self-reported Symptom and Sleep (EEG)- An Experimental Provocation Study*, PIERS Online Vol. 3 No. 7 2007 pp: 1148-1150 [View Summary on PIERS] [View Full Paper]
"Another study has just been published showing clear evidence that mobile phones can negatively affect human sleep. This study also clearly demonstrates non-thermal responses that cannot be due to a nocebo reaction"

Abdel-Rassoul G *et al*, (March 2007) *Neurobehavioral effects among inhabitants around mobile phone base stations*, Neurotoxicology. 2007 Mar;28(2):434-40 [View on Pubmed]
"Inhabitants living nearby mobile phone base stations are at risk for developing neuropsychiatric problems and some changes in the performance of neurobehavioral functions either by facilitation or inhibition"

Landgrebe M *et al*, (March 2007) *Altered cortical excitability in subjectively electrosensitive patients: results of a pilot study*, J Psychosom Res. 2007 Mar;62(3):283-8 [View on Pubmed]
"Electrosensitive patients showed reduced intracortical facilitation as compared to both control groups, while motor thresholds and intracortical inhibition were unaffected. This pilot study gives additional evidence that altered central nervous system function may account for symptom manifestation in subjectively electrosensitive patients as has been postulated for several chronic multisymptom illnesses sharing a similar clustering of symptoms"

Lin JC & Z Wang, (June 2007) *Hearing of microwave pulses by humans and animals: effects, mechanism, and thresholds,* Health Phys 92(6):621-8 [View on Pubmed]
"Microwave auditory effect is the most widely accepted biological effect of microwave radiation with a known mechanism of interaction: the thermoelastic theory. The phenomenon, mechanism, power requirement, pressure amplitude, and auditory thresholds of microwave hearing are discussed in this paper. A specific emphasis is placed on human exposures to wireless communication fields and magnetic resonance imaging (MRI) coils"

Huss A & M Röösli, (October 2006) *Consultations in primary care for symptoms attributed to electromagnetic fields - a survey among general practitioners* BMC Public Health 6:267 [View on Pubmed]
"An overview of the most recent EMF-related consultation per GP (in Switzerland) yielded sleep disorders, headaches and fatigue as the most often reported symptoms and mobile phone base stations, power lines and the own use of mobile phones as the main EMF sources suspected to be associated to symptoms. GPs judged the association between EMF and the symptoms to be plausible in 54% of the cases"

Johansson O, (2006) *Electrohypersensitivity: state-of-the-art of a functional impairment,* Electromagn Biol Med.2006;25(4):245-58 [View on Pubmed]
"In summary, it is evident from our preliminary data that various alterations are present in the electrohypersensitive person' skin. In view of recent epidemiological studies, pointing to a correlation between long-term exposure from power-frequent magnetic fields or microwaves and cancer, our data ought to be taken seriously and further analyzed"

Hutter HP *et al,* (May 2006) *Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations,* Occup Environ Med. 2006 May;63(5):307-13 [View on Pubmed]
"Despite very low exposure to HF-EMF, effects on wellbeing and performance cannot be ruled out, as shown by recently obtained experimental results; however, mechanisms of action at these low levels are unknown"

Papageorgiou CC *et al,* (April 2006) *Acute mobile phone effects on pre-attentive operation,* Neurosci Lett. 2006 Apr 10-17;397(1-2):99-103 [View on Pubmed]
"These findings provide evidence that the MP-EMF emitted by mobile phone affect pre-attentive information processing as it is reflected in P50 evoked potential. The basis of such an effect is unclear, although several possibilities exist and call for potential directions of future research"

Rajkovic V *et al,* (July 2005) *Histological characteristics of cutaneous and thyroid mast cell populations in male rats exposed to power-frequency electromagnetic fields,* Int J Radiat Biol. 2005 Jul;81(7):491-9 [View on Pubmed]
"The results indicate certain alterations of cutaneous and thyroid MC in rats exposed to EMF"

Leitgeb N *et al,* (May 2005) *Does "electromagnetic pollution" cause illness? An inquiry among Austrian general practitioners,* Wien Med Wochenschr 155:237-241 [View on Pubmed]
"An overwhelming percentage of (Austrian) general practitioners (up to 96%) to some degree, or totally, believe in a health-relevant role of environmental electromagnetic fields"

Belyaev I *et al,* (2005) *915 MHz microwaves and 50 Hz magnetic field affect chromatin conformation and 53BP1 foci in human lymphocytes from hypersensitive and healthy persons,* Bioelectromagnetics. 2005 Apr;26(3):173-84 [View on Pubmed]
"In conclusion, 50 Hz magnetic field and 915 MHz microwaves under specified conditions of exposure induced comparable responses in lymphocytes from healthy and hypersensitive donors that were similar but not identical to stress response induced by heat shock"

Bortkiewicz A *et al,* (2004) *Subjective symptoms reported by people living in the vicinity of cellular phone base stations: review,* Med Pr. 2004;55(4):345-51 [View on Pubmed]
"The results of the questionnaire survey reveal that people living in the vicinity of base stations report various complaints mostly of the circulatory system, but also of sleep disturbances, irritability, depression, blurred vision, concentration difficulties, nausea, lack of appetite, headache and vertigo. The performed studies showed the relationship between the incidence of individual symptoms, the level of exposure, and the distance between a residential area and a base station"

Oberfeld G *et al,* (October 2004) *The Microwave Syndrome - Further Aspects of a Spanish Study, Conference Proceedings* [View Full Paper]

Al-Khlaiwi T, Meo SA, (June 2004) *Association of mobile phone radiation with fatigue, headache, dizziness, tension and sleep disturbance in Saudi population,* Saudi Med J. 2004 Jun;25(6):732-6 [View on Pubmed]
"Based on the results of the present study, we conclude that the use of mobile phones is a risk factor for health hazards and suggest that long term or excessive use of mobile phones should be avoided"

Westerman R, Hocking B, (May 2004) *Diseases of modern living: neurological changes associated with mobile phones and radiofrequency radiation in humans,* Neurosci Lett. 2004 May 6;361(1-3):13-6 [View on Pubmed]
"Some of these observations are not consistent with the prevailing hypothesis that all health effects of RFR arise from thermal mechanisms. It is concluded that RFR from mobile phones can cause peripheral neurophysiological changes in some persons. The effects occur at exposure levels below the present safety levels for RFR. Possible non-thermal mechanisms are discussed and may point to future directions of research"

Röösli M *et al,* (February 2004) *Symptoms of ill-health ascribed to electromagnetic field exposure – a questionnaire survey* Int J Hyg Environ Health 207(2):141-50 [View on Pubmed]
"A mean of 2.7 different symptoms were reported. Sleep disorders (58%), headaches (41%), nervousness or distress (19%), fatigue (18%), and concentration difficulties (16%) were most common complaints. Complainants related their symptoms most frequently to exposure to mobile phone base stations (74%), followed by mobile phones (36%), cordless phones (29%) and power lines (27%). No distinct symptoms related to a specific field source could be identified. Eighty-five percent of the people who consulted a public authority because of their symptoms were unsatisfied with the response, whereas consultation of self-help groups or building ecologists usually fulfilled expectations. Two thirds of complainants had taken some

action to reduce their symptoms. The most common measure was to avoid exposure if possible. Removing or disconnecting indoor sources was judged to be the most effective action"

Navarro EA *et al,* (December 2003) *The Microwave Syndrome: A Preliminary Study in Spain,* Electromagn Biol Med 22(2-3): 161-169

Santini R *et al,* (September 2003) *Symptoms experienced by people in vicinity of base stations: II/ Incidences of age, duration of exposure, location of subjects in relation to the antennas and other electromagnetic factors,* Pathol Biol (Paris). 2003 Sep;51(7):412-5 [View on Pubmed]
"Significant increase ($p < 0.05$) in relation with age of subjects (elder subjects are more sensitive) and also, that the facing location is the worst position for some symptoms studied, especially for distances till 100 m from base stations. No significant difference is observed in the frequency of symptoms related to the duration of exposure (from < 1 year to > 5 years), excepted for irritability significantly increased after > 5 years. Other electromagnetic factors (electrical transformers, radio-television transmitters,...) have effects on the frequency of some symptoms reported by the subjects"

Caress SM & AC Steinemann (September 2003) *A review of a two-phase population study of multiple chemical sensitivities* Environmental Health Perspectives, 111(12):1490-7 [View on Pubmed]
"A significant percentage (27.5%) reported that their chemical hypersensitivity was initiated by an exposure to pesticides, whereas an equal percentage (27.5%) attributed it to solvents. Only 1.4% had a history of prior emotional problems, but 37.7% developed these problems after the physical symptoms emerged. This suggests that MCS has a physiologic and not a psychologic etiology"

Leitgeb N & Schröttner (September 2003) *Electrosensibility and Electromagnetic Hypersensitivity,* Bioelectromagnetics; 24; 387-394 [View on Pubmed]
"Evidence could be found for the existence of a subgroup of people with significantly increased electrosensibility (hypersensibility) who as a group could be differentiated from the general population"

Hocking B & Westerman R (October 2002) *Neurological changes induced by a mobile phone,* Occup Med (Lond). 2002 Oct;52(7):413-5 [View on Pubmed]
"The case is supportive of a neurological basis for some cases of dysaesthesiae associated with mobile phone use"

Stenberg B *et al,* (October 2002) *Medical and social prognosis for patients with perceived hypersensitivity to electricity and skin symptoms related to the use of visual display terminals,* Scand J Work Environ Health. 2002 Oct;28(5):349-57 [View on Pubmed]
"Patients with hypersensitivity to electricity, particularly women, have extensive medical problems and a considerable number of them stop working. Many patients with skin symptoms related to VDT use have a favorable prognosis. Both groups need early and consistent management"

Levallois P *et al,* (August 2002) *Study of self-reported hypersensitivity to electromagnetic fields in California,* Environ Health Perspect. 2002 Aug;110 Suppl 4:619-23 [View on Pubmed]
"We report the results of a telephone survey among a sample of 2,072 Californians. Being "allergic or very sensitive" to being near electrical devices was reported by 68 subjects, resulting in an adjusted prevalence of 3.2% (95% confidence interval = 2.8, 3.7). The perception of risk of exposure to EMFs through the use of hair dryers (vs. exposure to power and distribution lines) was the factor the most associated with self-reporting about hypersensitivity to EMFs. However, risk perception was not sufficient to explain the characteristics of people reporting this disorder"

Santini R *et al,* (July 2002) *Investigation on the health of people living near mobile telephone relay stations: I/Incidence according to distance and sex,* Pathol Biol (Paris) 2002 Jul;50(6):369-73 [View on Pubmed]
"Comparisons of complaints frequencies in relation with distance from base station and sex, show significant ($p < 0.05$) increase as compared to people living > 300 m or not exposed to base station, till 300m for tiredness, 200m for headache, sleep disturbance, discomfort, etc. 100m for irritability, depression, loss of memory, dizziness, libido decrease, etc. Women significantly more often than men ($p < 0.05$) complained of headache, nausea, loss of appetite, sleep disturbance, depression, discomfort and visual perturbations. This first study on symptoms experienced by people living in vicinity of base stations shows that, in view of radioprotection, minimal distance of people from cellular phone base stations should not be < 300m"

Edelstyn N, Oldershaw A, (January 2002) *The acute effects of exposure to the electromagnetic field emitted by mobile phones on human attention,* Neuroreport. 2002 Jan 21;13(1):119-21 [View on Pubmed]
"The experimental group were exposed to an electromagnetic field emitted by a 900 MHz mobile phone for 30 min. Cognitive performance was assessed at three points using six cognitive neuropsychological tests. Significant differences between the two groups were evident after 5 min on two tests of attentional capacity and one of processing speed"

Johansson *et al,* (November 2001) *Cutaneous mast cells are altered in normal healthy volunteers sitting in front of ordinary TVs/PCs - results from open-field provocation experiments,* J Cutan Pathol; 28: 513-519 [View on Pubmed]
"The present results might lay a foundation to understand the underlying cause of so-called "screen dermatitis" with special reference to mast cells"

Lyskov E *et al,* (November 2001) *Neurophysiological study of patients with perceived "electrical hypersensitivity"* International Journal of Psychophysiology, 42, 233-241 [View on Pubmed]
"The study investigated baseline neurophysiological characteristics of the central and autonomous regulation and their reactivity to different tests in a group of persons with so-called 'electrical hypersensitivity'"

Lyskov E *et al,* (October 2001) *Provocation study of persons with perceived electrical hypersensitivity and controls using magnetic field exposure and recording of electrophysiological characteristics* Bioelectromagnetics, 22(7), 457-462 [View on Pubmed]
"Persons reporting EHS differed from the control subjects in baseline values of investigated

physiological characteristics. Perhaps EHS patients have a rather distinctive physiological predisposition to sensitivity to physical and psychosocial environmental stressors"

Gangi S & Johansson O (April 2000) *A theoretical model based upon mast cells and histamine to explain the recently proclaimed sensitivity to electric and/or magnetic fields in humans,* Medical Hypotheses, April 2000 54(4), 663-71 [View on Pubmed]
"We present a theoretical model, based upon observations on EMFs and their cellular effects, to explain the proclaimed sensitivity to electric and/or magnetic fields in humans"

Freude G *et al,* (January 2000) *Microwaves emitted by cellular telephones affect human slow brain potentials,* Eur J Appl Physiol. 2000 Jan;81(1-2):18-27 [View on Pubmed]
"In addition to the VMT, EMF effects on SP were analysed in two further, less demanding tasks: in a simple finger movement task to elicit a Bereitschaftspotential (BP) and in a two-stimulus task to elicit a contingent negative variation (CNV). In comparison to the VMT, no significant main EMF effects were found in BP and CNV tasks. The results accounted for a selective EMF effect on particular aspects of human information processing, but did not indicate any influence on human performance, well-being and health"

Bergdahl J *et al,* (October 1998) *Odontologic survey of referred patients with symptoms allegedly caused by electricity or visual display units,* Acta Odontol Scand 56(5):303-7 [View on Pubmed]
"No or low secretion of the minor mucous glands was found in 43% of the patients. One patient showed hypersensitivity to gold and cobalt. The present study showed that various odontologic factors might be involved in some of these patients' suffering"

Eriksson N *et al,* (December 1997) *The psychosocial work environment and skin symptoms among visual display terminal workers: a case referent study,* Int J Epidemiol. 1997 Dec;26(6):1250-7 [View on Pubmed]
"This study supports the idea that the aetiological basis of facial skin symptoms among VDT-workers includes physical as well as psychosocial factors, and that the interaction between such factors might be significant in the understanding of skin complaints among VDT workers"

Gangi S & Johansson O, (December 1997) *Skin changes in "screen dermatitis" versus classical UV- and ionizing irradiation-related damage -- similarities and differences,* Exp Dermatol. 1997 Dec;6(6):283-91 [View on Pubmed]
"The results of this literature study demonstrate that highly similar changes exist in the skin of "screen dermatitis" patients, as regards the clinical manifestations as well as alterations in the cell populations, and in skin damaged by UV light or ionizing radiation"

Sandstrom M *et al,* (January 1997) *Neurophysiological effects of flickering light in patients with perceived electrical hypersensitivity,* J Occup Environ Med. 1997 Jan;39(1):15-22 [View on Pubmed]
"The sensitivity of the brain to this type of visual stimulation was tested by means of objective electrophysiological methods such as electroretinography and visual evoked potential. A higher amplitude of brain cortical responses at all frequencies of stimulation was found when

comparing patients with the control subjects, whereas no differences in retinal responses were revealed"

Johansson O *et al,* (October 1994) *Skin changes in patients claiming to suffer from "screen dermatitis": a two-case open-field provocation study,* Exp Dermatol. 1994 Oct;3(5):234-8 [View on Pubmed]
"The high number of mast cells present may explain the clinical symptoms of itch, pain, edema and erythema. Naturally, in view of the present public debate, the observed results are highly provocative and, we believe, have to be taken seriously"

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 8

Description:
Article on electromagnetic sensitivity.

This exhibit will show:
People in 30 countries have reported electromagnetic sensitivity and there are support groups worldwide. The disability is recognized worldwide.

This is important because:
I'm asserting that E.M sensitivity is a legitimate phenomena and that I have suffered with it for years. Smart meter radiation greatly worsens my insomnia and causes difficulty concentrating.

Electromagnetic Hypersensitivity

What is electromagnetic hypersensitivity?

Following is an excerpt from "Electromagnetic hypersensitivity means Peter Lloyd can't leave his house... or enjoy any modern pleasures inside" by Martin Shipton, *Wales Online*, Oct 16, 2014:

The term "electrical hypersensitivity" was first used in 1989, while "electromagnetic hypersensitivity" - EHS for short - was coined in 1994 to reflect sufferers' sensitivity to magnetic as well as electric fields. As early as the 1930s, however, EHS symptoms were observed in people working with radio and electricity, and with military radar in the 1940s.

Environmental EHS appeared in the general population from the 1970s with computers. It increased in the 1980s with mobile and cordless phones, and with wifi from 2000. Thousands of people are now linked with EHS support groups in 30 countries. The first started in Sweden in 1989; the UK group began in 2003.

Sweden recognised EHS as a functional disability in 2002.

The Canadian Human Rights Commission did likewise in 2007.

In 2009, the European Parliament voted for persons with EHS to be recognised as disabled.

Despite having official recognition, many doctors still know little or nothing about the condition.

This is an excerpt from a more detailed article to be found at:

http://www.saferemr.com/2014/10/electromagnetic-hypersensitivity_30.html

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 9

Description:
Research on electromagnetic fields and how they affect human physiology.

This exhibit will show:
Insomnia is the number one symptom reported after exposure to EM fields (page 2). Another common symptom is concentration difficulty.

This is important because:
It supports my assertion that smart meter radiation has greatly worsened my insomnia and caused difficult concentration.

Journal of Chemical Neuroanatomy

Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression

Volume 75, Part B, September 2016, Pages 43-51
Martin L.Pall
https://doi.org/10.1016/j.jchemneu.2015.08.001Get rights and content

http://www.sciencedirect.com/science/article/pii/S0891061815000599

Abstract

Non-thermal microwave/lower frequency electromagnetic fields (EMFs) act via voltage-gated calcium channel (VGCC) activation. Calcium channel blockers block EMF effects and several types of additional evidence confirm this mechanism. Low intensity microwave EMFs have been proposed to produce neuropsychiatric effects, sometimes called microwave syndrome, and the focus of this review is whether these are indeed well documented and consistent with the known mechanism(s) of action of such EMFs. VGCCs occur in very high densities throughout the nervous system and have near universal roles in release of neurotransmitters and neuroendocrine hormones. Soviet and Western literature shows that much of the impact of non-thermal microwave exposures in experimental animals occurs in the brain and peripheral nervous system, such that nervous system histology and function show diverse and substantial changes. These may be generated through roles of VGCC activation, producing excessive neurotransmitter/ neuroendocrine release as well as oxidative/nitrosative stress and other responses. Excessive VGCC activity has been shown from genetic polymorphism studies to have roles in producing neuropsychiatric changes in humans. Two U.S. government reports from the 1970s to 1980s provide evidence for many neuropsychiatric effects of non-thermal microwave EMFs, based on

occupational exposure studies. 18 **More recent epidemiological studies, provide substantial evidence that microwave EMFs from cell/mobile phone base stations, excessive cell/mobile phone usage and from wireless smart meters can each produce similar patterns of neuropsychiatric effects, with several of these studies showing clear dose–response relationships.** Lesser evidence from 6 additional studies suggests that short wave, radio station, occupational and digital TV antenna exposures may produce similar neuropsychiatric effects. **Among the more commonly reported changes are sleep disturbance/insomnia**, headache, depression/depressive symptoms, fatigue/tiredness, dysesthesia, **concentration/attention dysfunction**, memory changes, dizziness, **irritability, loss of appetite/body weight,** restlessness/anxiety, nausea, skin burning/tingling/dermographism and EEG changes. In summary, then, the mechanism of action of microwave EMFs, the role of the VGCCs in the brain, the impact of non-thermal EMFs on the brain, **extensive epidemiological studies performed over the past 50 years, and five criteria testing for causality, all collectively show that various non-thermal microwave EMF exposures produce diverse neuropsychiatric effects.**

The most commonly reported neuropsychiatric symptoms from these studies are summarized in Table 4.

Table 4. Commonly reported neuropsychiatric symptoms following microwave EMF exposure.

Symptom(s)	Numbers of studies reporting
Sleep disturbance/insomnia	**17**
Headache	14
Fatigue/tiredness	11
Depression/depressive symptoms	10
Dysesthesia (vision/hearing/olfactory dysfunction)	10
Concentration/attention/cognitive dysfunction	**10**
Dizziness/vertigo	9
Memory changes	8
Restlessness/tension/anxiety/stress/agitation/feeling of discomfort	8

Symptom(s)	Numbers of studies reporting
Irritability	7
Loss of appetite/body weight	6

http://www.sciencedirect.com/science/article/pii/S0891061815000599

More Excerpts from the above article:

Table 3. Neuropsychiatric symptoms apparently produced by exposure to various electromagnetic fields.

Citation	EMF exposure	Apparent neuropsychiatric symptoms
Abdel-Rassoul et al. (2007)	Living near mobile phone base station	Significant increases in neuropsychiatric complaints included: headache, memory changes, dizziness, tremors, depressive symptoms, sleep disturbance; attributed to effects of EMFs on the human nervous system.
Al-Khlaiwi and Meo (2004)	Mobile phone use	Higher prevalence of fatigue, headache, dizziness, tension and sleep disturbance; the authors conclude that mobile phone use is a risk factor for developing these symptoms.
Altpeter et al. (2000)	Short-wave broadcasting tower, ranging from 6.1 to 21.8 MHz	Sleep disruption shown to occur, correlated with exposures and apparent increase over time; short term suppression of melatonin shown, based on melatonin increases during a 3 day period when the tower was turned off.
Bortkiewicz et al. (2004)	Living near cell phone base station EMFs	Sleep disturbance, irritability, depression, blurred vision, concentration difficulties, nausea, lack of appetite, headache, vertigo.
Bortkiewicz et al. (2012)	Living near mobile phone base stations	Dose response relationships for sleep disturbance, irritability, depression, blurred vision, concentration difficulties, nausea, lack of appetite.
Chu et al. (2011), also Chia et al. (2000), Oftedal et al. (2000)	Mobile phone use	Headache during prolonged mobile phone use or within an hour following such use, with pain occurring on the ipsilateral side of the head; similar observations obtained in each of the 3 studies in column 1; see also Frey (1998).
Conrad (2013)	Smart meter EMF exposure	14 common new symptoms (both severe and moderate) among those exposed and symptomatic, 13 apparent neuropsychiatric: Insomnia, tinnitus,

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 10

Description:
Summary of the case against smart meters by Dr David O. Carpenter MD, Dir Institute for Health and the Environment University at Albany.

This exhibit will show:
Specific problems with smart meters from an expert in the field. Includes comparison of smart meters and cell phones.

This is important because:
The author is a co-editor of the highly regarded Bioinitiative Report-2012.

UNIVERSITY AT ALBANY
State University of New York

Institute for Health and the Environment
and
Department of Environmental Health Sciences
School of Public Health

12 August 2016

New York Sate Public Service Commission
Three Empire Plaza
Albany, New York 12223-1350

Re: Case 14-M-0196

Dear Sirs/Madams:

This is concerning potential adverse health effects associated with exposure to radiofrequency (RF) radiation, specifically that from electronic utility 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. In addition I was invited to present to the recent President's Cancer Panel on the subject of powerline and radiofrequency fields and cancer, and the publication that came from that Panel is attached. I have edited two books on effects of EMFs, including RF radiation. I served as the co-editor of the Bioinitiative Report (www.bioinitiative.org), a comprehensive review of the literature on this subject. The public health chapter from this report was subsequently published in a peer reviewed journal, which is attached. This is a subject which I know well, and one on which I take a public health approach that has as a fundamental principle the need to protect against risk of disease even when one does not have all the information that would be desirable.

There is clear and strong evidence that intensive use of cell phones increases the risk of brain cancer, tumors of the auditory nerve and cancer of the parotid gland, the salivary gland in the cheek by the ear. The evidence for this conclusion is detailed in many publications in the peer-reviewed scientific literature. Most recently the National Toxicology Program reported that chronic exposure of rats to cell phone radiation resulted in the development of the same kinds of brain cancer and auditory nerve tumors (although in this case in the heart not the ear) that are seen in human using cell phones excessively. Electronic meters use similar radiofrequency radiation, in some cases exposing the whole body to levels of radiofrequency radiation similar to cell phones. The difference between a cell phone and an electronic meter environment is that while the cell phone is used only intermittently a smart meter environment is continuous. There is also strong evidence that leukemia rates are increased among people living near to powerful AM radio transmission towers. Because WiFi, radio transmission towers and electronic meters all generate similar RF radiation, my conclusion is that if the whole body is exposed, leukemia is the major cancer of concern, while if only the head is exposed as in using a cell phone, one sees increased risk of local cancers, such as brain cancer. There are a variety of other health effects reported as a result of exposure to RF radiation, but in my judgment the increased risk of cancer is both the best documented and the disease of greatest concern.

There have been few careful studies specifically of the health effects of electronic meters to my knowledge, in great part because they haven't been around very long. But they utilize the same type of RF radiation that is used in cell phones. It should be noted that the World Health Organization has

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Institute for Health and the Environment
and
Department of Environmental Health Sciences
School of Public Health

declared radiofrequency radiation to be a possible human carcinogen. While it is true that the nature of exposure to RF from electronic meters is not significantly different from that coming from other wireless devices, what is important is cumulative, aggregate exposure. My position is that we should practice "prudent avoidance", which is to say reduce unnecessary exposure to the degree possible until the magnitude of risk is fully understood.

My specific concerns about electronic meters are as follows:

1. The benefit of the electronic meters is entirely to the utilities, and is economic in nature. If they install these 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 which is already too high.
2. When an electronic meter is installed residents have no choice in the matter or ability to avoid exposure. But every individual has the option to use or not use other personal wireless devices. 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. Most electronic meters transmit signals to the utility for relatively short periods of time, but generate radiofrequency pulses at frequent intervals all day and night. Thus the device continuously generates RF radiation that will expose anyone nearby 24/7.
4. The evidence for adverse effects of radiofrequency radiation is currently strong and grows stronger with each new study. Analog meters with shielded cable do not increase exposure.
5.

In my view, as a public health physician with specific expertise in the human effects of radiofrequency radiation, I urge you to require Central Hudson to install analog meters where residents request them. At the very least individuals concerned about their health and the health of their families should be allowed to choose an analog meter. Analog meters have withstood the test of time for safety and are not a source of RF radiation. Instillation of electronic meters will adversely affect the health of New York State residents and will ultimately invite legal action arising from the development of diseases known to be associated with exposure to RF radiation.

Thank you for the opportunity to comment on this important public health concern, and on the general issue of electronic meters. The use of electronic utility meters 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

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Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # //

Description:
The landmark U.S. National Toxicology Program 10 year, $25million study on cell phone radiation.

This exhibit will show:
Rats exposed to cell phone radiation developed specific tumors and NONE of the rats in the controlled group developed those cancerous tumors.

This is important because:
Cell phone radiation is similar to that emitted by smart meters.

This is a report on a 10 year $25 million study by the National Toxicology Program of cell phone radiation and cancer. It is understood to be the most thorough study ever done.

http://microwavenews.com/news-center/ntp-cancer-results

Cell Phone Radiation Boosts Cancer Rates in Animals;

$25 Million NTP Study Finds Brain Tumors

U.S. Government Expected To Advise Public of Health Risk

The cell phone cancer controversy will never be the same again.

The U.S. National Toxicology Program (NTP) is expected to issue a public announcement that cell phone radiation presents a cancer risk for humans. The move comes soon after its recently completed study showed statistically significant increases in cancer among rats that had been exposed to GSM or CDMA signals for two-years.

Discussions are currently underway among federal agencies on how to inform the public about the new findings. NTP senior managers believe that these results should be released as soon as possible because just about everyone is exposed to wireless radiation all the time and therefore everyone is potentially at risk.

The NTP findings show that as the intensity of the radiation increased, so did the incidence of cancer among the rats. "There was a significant dose-response relationship," a reliable source, who has been briefed on the results, told *Microwave News*. The rats were exposed to three different exposure levels (1.5, 3 and 6 W/Kg, whole body exposures) and two different types of cell phone radiation, GSM and CDMA.

An Amazing Coincidence?

Importantly, the exposed rats were found to have higher rates of two types of cancers: glioma, a tumor of the glial cells in the brain, and malignant schwannoma of the heart, a very rare tumor. None of the unexposed control rats developed either type of tumor.

A number of epidemiological studies have linked cell phones to both gliomas and to Schwann cell tumors. The Interphone study, for instance, found an association between the use of cell phones and gliomas.

The sheath that wraps around cranial nerves —such as the one that connects the inner ear to the brain— is made of Schwann cells. Tumors of those cells are called acoustic neuromas. That is, an acoustic neuroma is a type of schwannoma. At least four different epidemiological studies have found an association between the use of cell phones and acoustic neuromas.

Ron Melnick, who led the team that designed the NTP study and who is now retired, confirmed the general outline of the results detailed by the confidential source. "The NTP tested the hypothesis that cell phone radiation could not cause health effects and that hypothesis has now been disproved," he said in a telephone interview. **"The experiment has been done and, after extensive reviews, the consensus is that there was a carcinogenic effect."**

"These data redefine the cell phone radiation controversy," Melnick said. The safety of cell phones has been debated for more than 20 years, especially after the **International Agency for Research on Cancer (IARC) classified RF radiation as a possible human carcinogen in 2011.**

"This is a major public health concern because the cells which became cancerous in the rats were the same types of cells as those that have been reported to develop into tumors in cell phone epidemiological studies," Melnick added. "For this to be a chance coincidence would be truly amazing."

The NTP radiation project, which has been underway for more than a decade, is the most expensive ever undertaken by the toxicology program. More than $25 million has been spent so far.

NTP Stands By the Study Results

Because of the importance of these results to public health, the NTP alerted the highest levels of the National Institutes of Health (NIH), where resistance

prompted further reviews. No serious flaws in the data or the conduct of the studies were identified.

Senior managers including Linda Birnbaum, the director of the National Institute of Environmental Health Sciences (NIEHS) who also serves as the director of the NTP, and John Bucher, the associate director of the NTP, who is in charge of the cell phone study, are standing by the study findings. They see the need to release the results as a public health imperative, according to the source.

Chris Portier, who once held Bucher's job, agrees that the NTP is doing the right thing. "I would be adamant that we should share the data with the public as soon as possible," he said in an interview. The cell phone study was initiated while Portier was serving as the associate director of the NTP. He is now retired, though he continues to work as a consultant.

All the various agencies are now in the process of planning the release of the NTP findings.

Unexpected Findings

"This is a game changer, there is no question," said David Carpenter, the director of the Institute for Health and the Environment at the University of Albany. "It confirms what we have been seeing for many years —though now we have evidence in animals as well as in humans." Carpenter went on to add, "The NTP has the credibility of the federal government. It will be very difficult for the naysayers to deny the association any longer." Carpenter's institute is a collaborating center of the World Health Organization (WHO).

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 12

Description:
A major consultant for the insurance industry warns of the dangers and financial liability associated with smart meters and other microwave sources.

This exhibit will show:
that all major insurers have withdrawn from the microwave exposure market, the last one being Lloyd's of London in 2015.

This is important because:
Insurance companies are in the business of assessing risk and they believe that microwave exposure is not safe.

By Gloria Vogel
Thursday, July 27, 2017 11:18 AM EDT

A Coming Storm For Wireless?

- Increased RF injuries may result from the proliferation of antennas to support expanding wireless activity.
- As workers and the medical community begin to better understand those RF injuries, the wireless industry could face increased RF safety awareness issues.
- Insurers no longer provide RF exposure coverage, so wireless providers may find property owners less willing to renew existing leases, or to lease space for antennas.
- An RF safety protocol could help protect workers and the financial interests of the wireless ecosystem.

Jobsite hazards, both seen and unseen, exist everywhere in our nation. All but a few of these safety challenges can be mitigated when corporations or industries decide to address them properly. Imagine an enterprise sector that utilizes a known human hazard and knowingly turns a blind eye to the health and safety of third party workers. Yet, this is exactly the situation surrounding radio frequency (RF) radiation within the wireless industry. Wireless carriers have long hidden behind the veil of federal compliance to avoid implementing a meaningful RF safety solution.

To date, the wireless industry has managed to stay relatively unscathed financially from injuries related to RF radiation. This is largely due to the medical community's ignorance of the effects of RF injuries, either cognitive or physical. If experts in the medical community have no understanding of RF radiation, how can a worker realize they have been injured when RF radiation is invisible, odorless, and tasteless? Workers have no way of connecting their overexposure incident with the manifestation of symptoms, which may not arise immediately.

An Invisible Threat with Detrimental Impacts

The risk of RF radiation overexposure from transmitting antennas has long been recognized as a human health hazard and is identified as such by the FCC. RF radiation hazards from transmitting antennas can have thermal or

cognitive/psychological injuries. Thermal injuries result in heating of tissue. Cognitive injuries manifest as memory loss, mood disorders, sleep disorders, and impaired or diminished cognitive function.

Global Insurers Withdraw from RF Exposure Coverage

In 2013, AM Best, the leading insurance rating agency, estimated that 250,000 workers are overexposed to radiation annually at wireless antenna sites. Since then, global insurers have chosen to exclude RF coverage from their policies. The last global insurer to exit the RF exposure market was Lloyd's of London in 2015. The ramifications of insurance firms excluding RF coverage are considerable. Without insurance coverage, wireless providers may find property owners less willing to lease space for antennas and current property owners may be less willing to renew existing leases. Without adequate insurance, the risk to the property owners far outweighs the lease revenue they receive. A single uninsured RF injury claim can wipe out years of lease revenue and expose the property owner to expensive litigation costs.

In Harm's Way

Historically, antennas have been placed at inaccessible, remote, or fenced locations to prevent accidental RF exposure. However, as the demand for better service has increased, antennas have continued to encroach into urban and residential areas. Wireless carriers now install antennas in the sides of buildings, on rooftops, or in faux-chimneys, many of which are disguised to the untrained eye. As such, a painter, roofer, or other contractor performing routine maintenance on the building is placed in immediate danger due to close proximity to transmitting antennas while remaining unaware of any potential hazard.

The Unaware Medical Community

The medical community is ill-prepared to handle RF overexposure cases since physicians are neither educated nor trained to recognize the symptoms of RF radiation overexposure. Furthermore, they lack the knowledge to treat overexposure injuries. RF overexposure injuries resemble a variety of other ailments and therefore are commonly misdiagnosed. To the insurance industry, these injuries are classified as "Incurred but Not Reported" and are a significant factor in their decision to exclude RF exposure coverage.

Preventing "The Next Asbestos"

Through calculated tactics, legal actions, and lobbying, the wireless carriers continue the false narrative that there are no injuries or risks to unsuspecting workers near RF transmitting antennas. As workers and the medical community begin to recognize RF injuries, claims will accumulate as the plaintiff's bar becomes involved, and third-party litigation multiplies.

Fortunately, the industry still has time to address this issue responsibly by adopting a comprehensive RF safety protocol which will protect workers and the financial interests of the wireless ecosystem – including the major players: AT&T (NYSE:T), Verizon (NYSE:VZ), T-Mobile (NASDAQ:TMUS), and Sprint (NYSE:S).

Author

Gloria Vogel is currently an Adjunct Professor at NYU-SPS. She also teaches in the CPCU program. She was previously a Senior Vice President at Drexel Hamilton, and a Managing Director at Vogel Capital Management, an investment and consulting firm based in New York City. Gloria is a financial analyst and has been a consultant to the insurance industry with many years of experience following the insurance sector. She was the U.S. investor relations contact at Swiss Re, where she also performed credit analysis on insurer counterparty risks, and reviewed private equity/venture capital investments. Earlier, she was an All-Star equity research insurance analyst at several major Wall Street investment banks.

http://www.talkmarkets.com/content/stocks--equities/a-coming-storm-for-wireless?post=143501

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 13

Description:
International EMF Scientist Appeal to the UN. 220 scientists from 41 nations have signed the Appeal which warns of the dangers to health of non-ionizing radiation.

This exhibit will show:
Scientist from around the world warn of dangers from non-ionizing electromagnetic fields- eg. Smart meter radiation. These scientists work independently of the wireless industry.

This is important because:
It shows once again that there is worldwide consensus among scientist, NOT associated with the wireless industry that non-ionizing radiation is harmful

Note: As of November 9, 2017, 236 EMF scientists from 41 nations have signed the Appeal. https://emfscientist.org/

Note: Three minute video by Dr. Martin Blank –Signatory to the Appeal: https://vimeo.com/123468632

https://www.emfscientist.org/index.php/emf-scientist-appeal

International EMF Scientist Appeal

To: His Excellency Antonio Guterres, Secretary-General of the United Nations;
Honorable Dr. Tedros Adhanom, Director-General of the World Health Organization
Honorable Erik Solheim, Executive Director of the U.N. Environment Programme;
U.N. Member Nations

International Appeal

Scientists call for Protection from Non-ionizing Electromagnetic Field Exposure

We are scientists engaged in the study of biological and health effects of non-ionizing electromagnetic fields (EMF). Based upon peer-reviewed, published research, we have serious concerns regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices. These include–but are not limited to–radiofrequency radiation (RFR) emitting devices, such as cellular and cordless phones and their base stations, Wi-Fi, broadcast antennas, smart meters, and baby monitors as well as electric devices and infra-structures used in the delivery of electricity that generate extremely-low frequency electromagnetic field (ELF EMF).

Scientific basis for our common concerns

Numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines. Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plant and animal life.

These findings justify our appeal to the United Nations (UN) and, all member States in the world, to encourage the World Health Organization (WHO) to exert strong leadership in

fostering the development of more protective EMF guidelines, encouraging precautionary measures, and educating the public about health risks, particularly risk to children and fetal development. By not taking action, the WHO is failing to fulfill its role as the preeminent international public health agency.

Inadequate non-ionizing EMF international guidelines

The various agencies setting safety standards have failed to impose sufficient guidelines to protect the general public, particularly children who are more vulnerable to the effects of EMF. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) established in 1998 the "Guidelines For Limiting Exposure To Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)" . These guidelines are accepted by the WHO and numerous countries around the world. The WHO is calling for all nations to adopt the ICNIRP guidelines to encourage international harmonization of standards. In 2009, the ICNIRP released a statement saying that it was reaffirming its 1998 guidelines, as in their opinion, the scientific literature published since that time "has provided no evidence of any adverse effects below the basic restrictions and does not necessitate an immediate revision of its guidance on limiting exposure to high frequency electromagnetic fields . ICNIRP continues to the present day to make these assertions, in spite of growing scientific evidence to the contrary. It is our opinion that, because the ICNIRP guidelines do not cover long-term exposure and low-intensity effects, they are insufficient to protect public health.

The WHO adopted the International Agency for Research on Cancer (IARC) classification of extremely low frequency electromagnetic field (ELF EMF) in 2002 and radiofrequency radiation (RFR) in 2011 . This classification states that EMF is a possible human carcinogen (Group 2B). Despite both IARC findings, the WHO continues to maintain that there is insufficient evidence to justify lowering these quantitative exposure limits.

Since there is controversy about a rationale for setting standards to avoid adverse health effects, we recommend that the United Nations Environmental Programme (UNEP) convene and fund an independent multidisciplinary committee to explore the pros and cons of alternatives to current practices that could substantially lower human exposures to RF and ELF fields. The deliberations of this group should be conducted in a transparent and impartial way. Although it is essential that industry be involved and cooperate in this process, industry should not be allowed to bias its processes or conclusions. This group should provide their analysis to the UN and the WHO to guide precautionary action.

Collectively we also request that:

1. children and pregnant women be protected;
2. guidelines and regulatory standards be strengthened;
3. manufacturers be encouraged to develop safer technology;
4. utilities responsible for the generation, transmission, distribution, and monitoring of electricity maintain adequate power quality and ensure proper electrical wiring to minimize harmful ground current;

5. the public be fully informed about the potential health risks from electromagnetic energy and taught harm reduction strategies;
6. medical professionals be educated about the biological effects of electromagnetic energy and be provided training on treatment of patients with electromagnetic sensitivity;
7. governments fund training and research on electromagnetic fields and health that is independent of industry and mandate industry cooperation with researchers;
8. media disclose experts' financial relationships with industry when citing their opinions regarding health and safety aspects of EMF-emitting technologies; and
9. white-zones (radiation-free areas) be established.

1) http://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf
2) http://www.icnirp.org/cms/upload/publications/ICNIRPStatementEMF.pdf
3) http://monographs.iarc.fr/ENG/Monographs/vol80/
4) http://monographs.iarc.fr/ENG/Monographs/vol102/

Initial release date: May 11, 2015
Date of this version: November 9, 2017

All inquiries, including those from qualified scientists who request that their name be added to the Appeal, may be made by contacting Elizabeth Kelley, M.A., Director, EMFscientist.org, at info@EMFscientist.org.

Note: the signatories to this appeal have signed as individuals, giving their professional affiliations, but this does not necessarily mean that this represents the views of their employers or the professional organizations they are affiliated with.

Signatories

For Full list of signatories :

https://www.emfscientist.org/index.php/emf-scientist-appeal

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 14

Description:
Statement from the Board of the American Academy of Environmental Medicine.

This exhibit will show:
the American Academy of Environmental Medicine calls for an immediate moratorium on smart meter installation and restoring previously removed analog meters (page2).

This is important because:
It gives supports my complaint and request for removal of a smart meter.

American Academy of Environmental Medicine

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January 19, 2012

Decision of Commissioner Peevy (Mailed 11/22/2011)
Before The Public Utilities Commission Of The State Of California
On the proposed decision 11T03T014

Dear Commissioners:

The Board of the American Academy of Environmental Medicine opposes the installation of wireless smart meters in homes and schools based on a scientific assessment of the current medical literature (references available on request). Chronic exposure to wireless radiofrequency radiation is a preventable environmental hazard that is sufficiently well documented to warrant immediate preventative public health action.

As representatives of physician specialists in the field of environmental medicine, we have an obligation to urge precaution when sufficient scientific and medical evidence suggests health risks which can potentially affect large populations. The literature raises serious concern regarding the levels of radio frequency (RF T 3KHz
[300 GHz) or extremely low frequency (ELF [300Hz) exposures produced by smart meters to warrant an immediate and complete moratorium on their use and deployment until further study can be performed.

The board of the American Board of Environmental Medicine wishes to point out that existing FCC guidelines for RF safety that have been used to justify installation of smart meters only look at thermal tissue damage and are obsolete, since many modern studies show metabolic and genomic damage from RF and ELF exposures below the level of intensity which heats tissues. The FCC guidelines are therefore inadequate for use in establishing public health standards. More modern literature shows medically and biologically significant

effects of RF and ELF at lower energy densities. These effects accumulate over time, which is an important consideration given the chronic nature of exposure from smart meters. The current medical literature raises credible questions about genetic and cellular effects, hormonal effects, male fertility, blood/brain barrier damage and increased risk of certain types of cancers from RF or ELF levels similar to those emitted from smart meters. Children are placed at particular risk for altered brain development, and impaired learning and behavior. Further, EMF/RF adds synergistic effects to the damage observed from a range of toxic chemicals. Given the widespread, chronic, and essentially inescapable ELF/RF exposure of everyone living near a smart meter, the Board of the American Academy of Environmental Medicine finds it unacceptable from a public health standpoint to implement this technology until these serious medical concerns are resolved. We consider a moratorium on installation of wireless smart meters to be an issue of the highest importance.

The Board of the American Academy of Environmental Medicine also wishes to note that the US NIEHS National Toxicology Program in 1999 cited radiofrequency radiation as a potential carcinogen. Existing safety limits for pulsed RF were termed not protective of public health by the Radiofrequency Interagency Working Group (a federal interagency working group including the FDA, FCC, OSHA, the EPA and others). Emissions given off by smart meters have been *classified by the World Health Organization International Agency for Research on Cancer (IARC) as a Possible Human Carcinogen.*

Hence, we call for:

- x An immediate moratorium on smart meter installation until these serious public health issues are resolved. Continuing with their installation would be extremely irresponsible.

- x Modify the revised proposed decision to include hearings on health impact in the second proceedings, along with cost evaluation and community wide opt out.

- x Provide immediate relief to those requesting it and restore the analog meters.

Members of the Board
American Academy of Environmental Medicine

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 15

Description:
Daniel Hirsch's report on smart meter radiation. (See esp. pages 1,2and 6). Daniel Hirsch is a radiation expert, UCSD instructor. Independent of the wireless industry.

This exhibit will show:
Smart meters being on 24hrs per day expose residents to 160 times the radiation of a cell phone. Also, they expose the entire body, where cell phones only expose parts.

This is important because:
This shows that smart meters pose much more risk than cell phones

See Pages 1, 2 + 6 especially

Comments on the Draft Report
by the California Council on Science and Technology
"Health Impacts of Radio Frequency from Smart Meters"

by Daniel Hirsch[1]
31 January 2011

Abstract

The draft report by the California Council on Science and Technology (CCST) does not appear to answer the questions asked of it by the requesting elected officials. Furthermore, rather than being an independent, science-based study, the CCST largely cuts and pastes estimates from a brochure by the Electric Power Research Institute, an industry group, issued some weeks earlier. The EPRI estimates appear incorrect in a number of regards. When two of the most central errors are corrected – the failure to take into account duty cycles of cell phones and microwave ovens and the failure to utilize the same units (they should compare everything in terms of average whole body exposure) the cumulative whole body exposure from a Smart Meter at 3 feet appears to be approximately two orders of magnitude higher than that of a cell phone, rather than two orders of magnitude lower.

It is strongly recommended that CCST revise its Draft Report and conduct actual measurements of cell phone, microwave oven, and SmartMeter RF cumulative whole body power densities. If measurements aren't made, then rigorous calculations correcting for cell phone and microwave oven duty cycles and whole body exposures should be made.

A summary figure below shows how rough estimates of the effect of those corrections suggest SmartMeters may produce cumulative whole body exposures far higher than that of cell phones or microwave ovens.

http://www.committeetobridgethegap.org/pdf/110212_RFrad_comments.pdf

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[1] The assistance of two UCSC student research assistants, Bailey Hall and Catherine Wahlgren, in the preparation of this review is gratefully acknowledged.

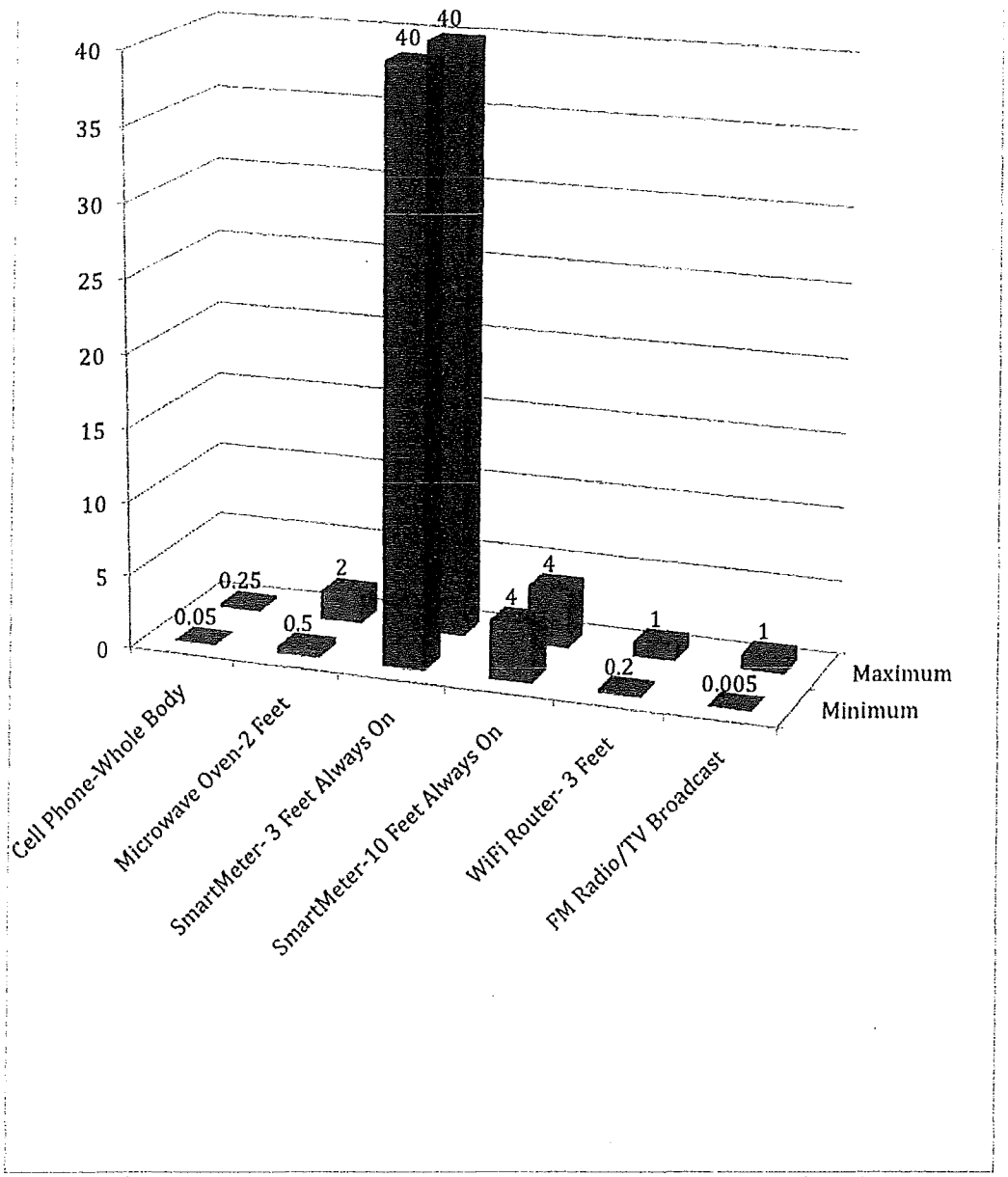

Figure A. Comparison of Radio-Frequency Levels to the Whole Body from Various Sources in $\mu W/cm^2$ over time [corrected for assumed duty cycle and whole body exposure extrapolated from assumed cell phone dose at ear].

On 30 July 2010 Assemblymember Jared Huffman requested that CCST undertake an "independent, science-based study" of two questions: "whether FCC standards for SmartMeters are sufficiently protective of public health taking into account current exposure levels to radiofrequency and electromagnetic fields, and further to assess whether additional technology specific standards are needed for SmartMeters and other devices that are commonly found in and around homes, to ensure adequate protection from adverse health effects."

Unfortunately, the Council draft report answers neither question.

In September, Assemblymember William Monning and Mill Valley Mayor Stephanie Moulton-Peters joined in the request, asking in particular that CCST review the central issue associated with the current FCC standards, which are decades old and based solely on protecting against prompt thermal effects (heating of tissue)—that they fail to take into consideration long-term and cumulative exposures to these devices and potential non-thermal health impacts (e.g., latent cancers).

Again, the Council's draft report provides little if any useful information or analysis of this matter. There is no mention or analysis of the specific studies that have suggested, for example, a cancer effect from RF exposure such as the large, international study funded by the cell phone industry, the Interphone study, that found a significant increase in brain cancers in people who used cell phones half an hour a day for ten years. Given the long latency period generally for solid cancers, such a finding gives pause as to what might be seen over the long term. Some other studies have suggested an increased risk of brain cancer on the side of the head where the cellphone is normally used. Other studies, however, have not found an effect. Given the nature of the request from the elected officials for a review of this critical scientific issue—whether there is the potential for non-thermal health effects from cumulative, long-term exposure to RF radiation—one would have hoped that there would have been a more detailed analysis of this question in the report.

The report is candid, however, that at present the issue is unresolved. But it goes on to then say there is no basis for changing the FCC standards which are based only on prompt, thermal effects. One could equally well say there is no basis for maintaining the FCC standards, given the uncertainties about latent, non-thermal effects.

What the CCST draft report does focus on, however, is the relative exposure from SmartMeters compared to other RF-emitting devices in common use. Here, again, the draft report disappoints. The elected officials cited claims made by the electric utility industry regarding safety of SmartMeters and purportedly relative low exposures compared to other common devices and requested "an independent, science-based study."

However, the CCST draft report does not appear to include much if any independent work on the subject but rather merely pastes in a table taken from an 8-page pamphlet released a few weeks earlier by the Electric Power Research Institute (EPRI), an advocacy group for the

electric power industry.[2] This EPRI table and the graph made from it constitute the core of the CCST report, and is reproduced here as Figure 1.

The EPRI pamphlet is not a peer-reviewed scientific study. It is a brief item for an advocacy group that is supported by industry. If the elected officials wanted the industry's views, it would have asked for them. Instead, it wished an independent, science-based study by an entity without the kinds of conflicts of interest EPRI has on this matter. But the CCST draft report is basically simply a cut-and-paste job from the EPRI brochure.

Note also that the estimate for exposure from a single SmartMeter contained in the EPRI item and repeated in the CCST draft is not a measured value but estimated—how is not made clear. EPRI's measurements were for a bank of ten SmartMeters; it didn't measure one alone but somehow estimated for it, despite the difference in how exposure falls off from one versus ten. The latter is inverse of the distance, the former inverse square of the distance. One presumes the electeds wanted actual measured values from an independent source, not a calculated value from the electric industry, without even an explanation of how it is was calculated and without independent verification.

CCST does correct one error made in the EPRI brochure whereby it reduced the presumed power density estimates for the SmartMeter by duty cycles of 1 and 5%. CCST rightly indicated that future duty cycles could be much higher as "new applications and functionality are added to the meter's communication module in the future." For this reason, it assumed a 100% duty cycle in its calculations.

HOWEVER, CCST did not correct numerous other apparent errors from the EPRI brochure when it adopted EPRI's values. For example, for cell phone exposures, CCST did not correct for the presumed duty cycle of the cell phone (which CCST indicates on average is 1%). Nor did it convert the EPRI cell phone power density estimate into comparable units. EPRI (and thus CCST) compared a whole body average exposure to SmartMeter radiation to peak exposure to the ear for the cell phone. One needs to compare apples and apples, or whole body exposures to whole body exposures. Comparing the peak dose to the ear from a cell phone, when the rest of the body gets vastly less radiation, with a whole body exposure where all organs get roughly the same dose from a SmartMeter, doesn't seem appropriate. If there is a cancer effect, it is likely associated with the total RF energy the body receives.

Similar apparent errors were made in the comparison to microwave ovens. Again, the duty cycle of the microwave oven is ignored. It is used perhaps fifteen minutes a day, and it is unlikely people are 2 feet away from the device for the full time it is on. Its "down time" must be included if one is looking, as requested by the elected officials, at potential cumulative, long-term exposures.

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[2] The EPRI brochure was apparently released on November 17, providing little if any time for serious review of it by CCST prior to the release a few weeks later (with the holidays intervening) of the CCST report on which it was based.

[Additionally, the values given for microwave oven exposures by EPRI and adopted without changed in the CCST draft report seem questionable. Three references are given in the EPRI report, although for which claim each applies is not made clear. The first reference, the ICNIRP report, does not in fact give measured values for microwave ovens, but instead reports what the legal limit for leakage is, generally reported to be orders of magnitude above what typical exposures from microwave ovens really are. The second reference is to a 1978 paper by PG&E's consultant, RA Tell. That paper CCST has not made available for review, but it is over three decades old, and thus of little relevance to today's microwave ovens. The third reference is merely to a personal communication with Tell, without any information as to the content of that communication. When one checks the values reported by EPRI and uncritically adopted by CCST, it appears that the first value, 5 mW/cm^2 at 2 inches from the device, is in fact not a measured value of typical exposures but the vastly higher legal limit for leakage. The literature in fact indicates that 50% of microwave ovens produce less than 0.062 mW/cm^2 at 5 cm, or two orders of magnitude below the value reported by EPRI and reproduced by CCST without question. See, e.g., R, Mathes, "Radiation Emission from Microwave Ovens," Journal of Radiation Protection, Vol. 12, No. 3, September 1992. One presumes the leakage rate has been reduced even further since then.]

One recognizes that if one is comparing to FCC existing standards based solely on acute, thermal effects that duty cycle might be treated differently. But if there is a cancer effect, which is what the electeds asked CCST to study, a likely key aspect of the dose-response relationship is the cumulative whole body dose. For ionizing radiation, about which I have spent much of my career, the determining factor is largely how much radiation energy the body has absorbed. [There are of course other factors, such as the relative biological effectiveness (RBE) of different types of ionizing radiation and varying sensitivity of different organs.) So, if the question were how does SmartMeter and cell phone RF radiation compare to FCC limits, duty cycle may be treated in a different fashion. But since the question is what if FCC limits, based solely on thermal effects, may be inadequate to protect against cancer and other non-thermal effects, then the duty cycle—which determines the cumulative total exposure received—and whole body exposure must be factored in. My fundamental recommendation is that the draft report should be revised to correct for these two factors.

I have taken the liberty, with the help of two student assistants, to demonstrate the potential impact of some of these corrections.

Figure 1 is simply the CCST Figure 1, which in turn was largely taken from the estimates in the EPRI pamphlet. Units were simply converted by CCST from mW/cm^2 to μW/cm^2 and it corrected the duty cycle for the SmartMeter, otherwise the data are unchanged from EPRI's estimates. One will note that the estimated exposure from the cell phone is just to the ear, in direct contact with the cell phone, whereas the other comparisons, including the SmartMeter, are for whole body exposures, and that the duty cycle of the cell phone and microwave oven were not corrected. In other words, the chart compares a SmartMeter that is always on with a cell phone or microwave oven when they are being used, even though 99% of the time they are not in use. This overestimates the cumulative exposure by a factor of 100 for the cell phone and microwave oven, and dramatically skews the comparison.

Figure 2 fixes the error regarding duty cycle for the cell phone and microwave oven, markedly altering the comparison. The minimum cumulative exposure over time from the SmartMeter at 3 feet is 80 times the minimum cumulative exposure from the microwave oven and four times the minimum cumulative exposure from the cell phone, for example. This does not involve any correction of the while-on exposure values for either the cell phone or microwave oven, only the duty cycle factor.

Figure 3 provides a very rough approximation of the correction of the cell phone at the ear estimate to a whole body estimate so it is comparable to the whole body estimate for the SmartMeter. It should be stressed that neither this estimate nor that in Figure 4 using a different approach is intended to be a definitive figure, but is intended to be exemplary of the kind of change to the comparison a detailed analysis may produce. It is my recommendation that CCST carefully measure, or at minimum thoroughly calculate, the average power density over the whole body from a cell phone held at the ear. We here have made two very rough estimates just to make the point what a far more detailed analysis may show.

The value used for the peak cell phone power density for a cell phone held to the ear in the CCST draft report is taken directly from the EPRI pamphlet, without apparent independent review or correction. According to p. 6 of the EPRI pamphlet, the value it gives apparently is not a measured value but an estimate. How the estimate was arrived at is not detailed in the brochure. All that is said is in footnote 1, "Based on a 3-inch 250mW antenna emitting in a cylindrical wavefront." A quick calculation to try to reproduce what EPRI must have done indicates that if it merely assumed that all of the energy from a 250mW cell phone was transmitted by holding directly against the ear into a circular area with a 3 inch diameter, the power density in that small circular area around the ear would be 5 mW/cm^2. That is precisely the upper value given by EPRI in its table. We don't know if that is what EPRI did, since it doesn't tell us what it did and CCST does not appear to have tried to confirm the asserted value. But in any case, 5 mW/cm^2 from a 250mW cell phone would indeed appear to require that that power be deposited solely in that very small circular area.

Averaging over the full potentially exposed surface area of the body (presuming only half the body surface could be exposed to the cell phone from any one angle), the whole body exposure would be approximately on average 0.25 mW/cm^2 given the maximum value to the ear of 5 mW/cm^2 put forward by EPRI and the CCST draft report and correcting as well for the duty cycle. The SmartMeter thus would produce 160 times more cumulative whole body exposure than the cell phone assuming this estimate for whole body exposure. This is shown in Figure 3.[3]

[3] In these graphs we have used the values for a microwave oven at 2 feet put forward by EPRI and repeated by CCST even though, as discussed above, they appear questionably high. Note that measured values indicate typical measured microwave oven RF fields 5 cm from the oven are in the range of 0.062 mW/cm^2, whereas the EPRI estimates used by CCST are for comparable values 2 feet away, which, if the exposure were drop by inverse square of the distance, should be very much lower. It is unclear whether EPRI is actually referring to measured values or to the legal limits, the latter being irrelevant in this context.

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 16

Description:
Bioinitiative report on electromagnetic radiation written by 29 authors from 10 nations who examined the results of 1800 studies.

This exhibit will show:
There is consensus on the dangers of electromagnetic radiation (which includes smart meter radiation) among experts around the world, not associated with the wireless industry.

This is important because:
This supports the idea that non-ionizing radiation has adverse health effects. Special note is made of electrical sensitivity in the next to last page.

http://bioinitiative.info/bioInitiativeReport2012.pdf
http://www.bioinitiative.org/table-of-contents/

BioInitiative 2012

A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation

Bio Initiative 2012

A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation

BioInitiativeWorkingGroup 2012

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Cite this report as:

BioInitiative Working Group – Cindy Sage and David Carpenter,Editors.

The BioInitiative 2012 Report has been prepared by 29 authors from ten countries*, ten holding medical degrees (MDs), 21 PhDs, and three MsC, MA or MPHs. Among the authors are three former presidents of the Bioelectromagnetics Society, and five full member s of BEMS. One distinguished author is the Chair of the Russian National Committee on Non Ionizing Radiation. Another is a Senior Advisor to the European Environmental Agency. As in 2007, each author is responsible for their own chapter.

BIOINITIATIVE 2012 – CONCLUSIONS Table 1-1

Overall, these 1800 or so new studies report abnormal gene transcription (Section 5); genotoxicity and single-and double-strand DNA damage (Section 6); stress proteins because of the fractal RF-antenna like nature of DNA (Section 7); chromatin condensation and loss of DNA repair capacity in human stem cells (Sections 6 and 15); reduction in free-radical scavengers – particularly melatonin (Sections 5, 9, 13, 14, 15, 16 and 17); neurotoxicity in humans and animals (Section 9), carcinogenicity in humans (Sections 11, 12, 13, 14, 15, 16 and 17); serious impacts on human and animal sperm morphology and function (Section 18); effects on offspring behavior (Section 18, 19 and 20); and effects on brain and cranial bone development in the offspring of animals that are exposed to cell phone radiation during pregnancy (Sections 5 and 18). This is only a snapshot of the evidence presented in the BioInitiative 2012 updated report.

BIOEFFECTS ARE CLEARLY ESTABLISHED

Bioeffects are clearly established and occur at very low levels of exposure to electromagnetic fields and radiofrequency radiation. Bioeffects can occur in the first few minutes at levels associated with cell and cordless phone use. Bioeffects can also occur from just minutes of exposure to mobile phone masts (cell towers), WI-FI, and wireless utility 'smart' meters that produce whole-body exposure. Chronic base station level exposures can result in illness.

BIOEFFECTS WITH CHRONIC EXPOSURES CAN REASONABLY BE PRESUMED TO RESULT IN ADVERSE HEALTH EFFECTS

Many of these bioeffects can reasonably be presumed to result in adverse health effects if the exposures are prolonged or chronic. This is because they interfere with normal body processes (disrupt homeostasis), prevent the body from healing damaged DNA, produce immune system imbalances, metabolic disruption and lower resilience to disease across multiple pathways. Essential body processes can eventually be disabled by incessant external stresses (from system-wide electrophysiological interference) and lead to pervasive impairment of metabolic and reproductive functions.

LOW EXPOSURE LEVELS ARE ASSOCIATED WITH BIOEFFECTS AND ADVERSE HEALTH EFFECTS AT CELL TOWER RFR EXPOSURE LEVELS

At least five new cell tower studies are reporting bioeffects in the range of 0.003 to 0.05 μW/cm2 at lower levels than reported in 2007 (0.05 to 0.1 uW/cm2 was the range below which, in 2007, effects were not observed). Researchers report headaches, concentration difficulties and behavioral problems in children and adolescents; and sleep disturbances, headaches and concentration problems in adults. Public safety standards are 1,000 – 10,000 or more times higher than levels now commonly reported in mobile phone base station studies to cause bioeffects.

EVIDENCE FOR FERTILITY AND REPRODUCTION EFFECTS:

HUMAN SPERM AND THEIR DNA ARE DAMAGED

Human sperm are damaged by cell phone radiation at very low intensities in the low microwatt and nanowatt/cm2 range (0.00034 – 0.07 uW/cm2). There is a veritable flood of new studies reporting sperm damage in humans and animals, leading to substantial concerns for fertility, reproduction and health of the offspring (unrepaired de novo mutations in sperm). Exposure levels are similar to those resulting from wearing a cell phone on the belt, or in the pants pocket, or using a wireless laptop computer on the lap. Sperm lack the ability to repair DNA damage.

Studies of human sperm show genetic (DNA) damage from cell phones on standby mode and wireless laptop use. Impaired sperm quality, motility and viability occur at exposures of 0.00034 uW/cm2 to 0.07 uW/cm2 with a resultant reduction in human male fertility. Sperm cannot repair DNA damage.

Several international laboratories have replicated studies showing adverse effects on sperm quality, motility and pathology in men who use and particularly those who wear a cell phone, PDA or pager on their belt or in a pocket (Agarwal et al, 2008; Agarwal et al, 2009; Wdowiak et al, 2007; De Iuliis et al, 2009; Fejes et al, 2005; Aitken et al, 2005; Kumar, 2012). Other studies conclude that usage of cell phones, exposure to cell phone radiation, or storage of a mobile phone close to the testes of human males affect sperm counts, motility, viability and structure (Aitken et al, 2004; Agarwal et al, 2007; Erogul et al., 2006). Animal studies have demonstrated oxidative and DNA damage, pathological changes in the testes of animals, decreased sperm mobility and viability, and other measures of deleterious damage to the male germ line (Dasdag et al, 1999; Yan et al, 2007; Otitoloju et al, 2010; Salama et al, 2008; Behari et al, 2006; Kumar et al, 2012). There are fewer animal studies that have studied effects of cell phone radiation on female fertility parameters. Panagopoulous et al. 2012 report decreased ovarian development and size of ovaries, and premature cell death of ovarian follicles and nurse cells in *Drosophila melanogaster.* Gul et al (2009) report rats exposed to stand-by level RFR (phones on but not transmitting calls) caused decrease in the number of ovarian follicles in pups born to these exposed dams. Magras and Xenos (1997) reported irreversible infertility in mice after five (5) generations of exposure to RFR at cell phone tower exposure levels of less than one microwatt per centimeter squared (μW/cm2).

EVIDENCE THAT CHILDREN ARE MORE VULNERABLE

There is good evidence to suggest that many toxic exposures to the fetus and very young child have especially detrimental consequences depending on when they occur during critical phases of growth and development (time windows of critical development), where such exposures may lay the seeds of health harm that develops even decades later. Existing FCC and ICNIRP public safety limits seem to be not sufficiently protective of public health, in particular for the young (embryo, fetus, neonate, very young child).

The Presidential Cancer Panel (2010) found that children '*are at special risk due to their smaller body mass and rapid physical development, both of which magnify their vulnerability to known carcinogens, including radiation.*'

The American Academy of Pediatrics, in a letter to Congressman Dennis Kucinich dated 12 December 2012 states "*Children are disproportionately affected by environmental exposures, including cell phone radiation. The differences in bone density and the amount of fluid in a child's brain compared to an adult's brain could allow children to absorb greater quantities of RF energy deeper into their brains than adults. It is essential that any new standards for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure thay are safeguarded through their lifetimes.*"

FETAL AND NEONATAL EFFECTS OF EMF

Fetal (*in-utero*) and early childhood exposures to cell phone radiation and wireless technologies in general may be a risk factor for hyperactivity, learning disorders and behavioral problems in school.

Fetal Development Studies: Effects on the developing fetus from *in-utero* exposure to cell phone radiation have been observed in both human and animal studies since 2006. Divan et al (2008) found that children born of mothers who used cell phones during pregnancy develop more behavioral problems by the time they have reached school age than children whose mothers did not use cell phones during pregnancy. Children whose mothers used cell phones during pregnancy had 25% more emotional problems, 35% more hyperactivity, 49% more conduct

problems and 34% more peer problems
(Divan et al., 2008).

Common sense measures to limit both ELF-EMF and RF EMF in these populations is needed, especially with respect to avoidable exposures like incubators that can be modified; and where education of the pregnant mother with respect to laptop computers, mobile phones and other sources of ELF-EMF and RF EMF are easily instituted.
Sources of fetal and neonatal exposures of concern include cell phone radiation (both paternal use of wireless devices worn on the body and maternal use of wireless phones during pregnancy). Exposure to whole-body RFR from base stations and WI-FI, use of wireless laptops, use of incubators for newborns with excessively high ELF-EMF levels resulting in altered heart rate variability and reduced melatonin levels in newborns, fetal exposures to MRI of the pregnant mother, and greater susceptibility to leukemia and asthma in the child where there have been maternal exposures to ELF-EMF.

A precautionary approach may provide the frame for decision-making where remediation actions have to be realized to prevent high exposures of children and pregnant woman.
(Bellieni and Pinto, 2012 – Section 19)

EMF/RFR AS A PLAUSIBLE BIOLGICAL MECHANISM FOR AUTISM (ASD)

- Children with existing neurological problems that include cognitive, learning, attention, memory, or behavioral problems should as much as possible be provided with wired (not wireless) learning, living and sleeping environments,
- Special education classrooms should observe 'no wireless' conditions to reduce avoidable stressors that may impede social, academic and behavioral progress.
- All children should reasonably be protected from the physiological stressor of significantly elevated EMF/RFR (wireless in classrooms, or home environments).

- School districts that are now considering all-wireless learning environments should be strongly cautioned that wired environments are likely to provide better learning and teaching environments, and prevent possible adverse health consequences for both students and faculty in the long-term.
- Monitoring of the impacts of wireless technology in learning and care environments should be performed with sophisticated measurement and data analysis techniques that are cognizant of the non-linear impacts of EMF/RFR and of data techniques most appropriate for discerning these impacts.
- There is sufficient scientific evidence to warrant the selection of wired internet, wired classrooms and wired learning devices, rather than making an expensive and potentially health-harming commitment to wireless devices that may have to be substituted out later, and
- Wired classrooms should reasonably be provided to all students who opt-out of wireless environments. (Herbert and Sage, 2012 – Section 20)

Many disrupted physiological processes and impaired behaviors in people with ASDs closely resemble those related to biological and health effects of EMF/RFR exposure. Biomarkers and indicators of disease and their clinical symptoms have striking similarities. Broadly speaking, these types of phenomena can fall into one or more of several classes: a) alteration of genes or gene expression, b) induction of change in brain or organismic development, c) alteration of phenomena modulating systemic and brain function on an ongoing basis throughout the life course (which can include systemic pathophysiology as well as brain-based changes), and d) evidence of functional alteration in domains such as behavior, social interaction and attention known to be challenged in ASD.Several thousand scientific studies over four decades point to serious biological effects and health harm from EMF and RFR. These studies report genotoxicity, single-and double-strand DNA damage, chromatin condensation, loss of DNA repair capacity in human stem cells, reduction in free-radical scavengers (particularly melatonin), abnormal gene transcription, neurotoxicity, carcinogenicity, damage to sperm morphology and function, effects on behavior, and effects on brain development in the fetus of human mothers that use cell phones during pregnancy. Cell phone exposure has been linked to altered fetal brain development and ADHD-like behavior in the offspring of pregnant mice.Reducing life-long health risks begins

in the earliest stages of embryonic and fetal development, is accelerated for the infant and very young child compared to adults, and is not complete in young people (as far as brain and nervous system maturation) until the early 20's. Windows of critical development mean that risk factors once laid down in the cells, or in epigenetic changes in the genome may have grave and life-long consequences for health or illness for every individual.

All relevant environmental conditions, including EMF and RFR, which can degrade the human genome, and impair normal health and development of species including homo sapiens, should be given weight in defining and implementing prudent, precautionary actions to protect public health. Allostatic load in autism and autistic decompensation – we may be at a tipping point that can be pushed back by removing unnecessary stressors like EMF/RFR and building resilience.

The consequence of ignoring clear evidence of large-scale health risks to global populations, when the risk factors are largely avoidable or preventable is too high a risk to take. With the epidemic of autism (ASD) putting the welfare of children, and their families in peril at a rate of one family in 88, the rate still increasing annually, we cannot afford to ignore this body of evidence. The public needs to know that these risks exist, that transition to wireless should not be presumed safe, and that it is very much worth the effort to minimize exposures that still provide the benefits of technology in learning, but without the threat of health risk and development impairments to learning and behavior in the classroom.

(Herbert and Sage, 2010 – Section 20)

THE BLOOD-BRAIN BARRIER IS AT RISK

The BBB is a protective barrier that prevents the flow of toxins into sensitive brain tissue. Increased permeability of the BBB caused by cell phone RFR may result in neuronal damage. Many research studies show that very low intensity exposures to RFR can affect the blood-brain barrier (BBB) (mostly animal studies). Summing up the research, it is more probable than unlikely that non-thermal EMF from cell phones and base stations do have effects upon biology. A single 2-hr exposure to cell phone radiation can result in increased leakage of the BBB, and 50 days after exposure, neuronal damage can be seen, and at the later time point also albumin

leakage is demonstrated. *The levels of RFR needed to affect the BBB have been shown to be as low as 0.001 W/kg, or less than holding a mobile phone at arm's length. The US FCC standard is 1.6 W/kg; the ICNIRP standard is 2 W/kg of energy (SAR) into brain tissue from cell/cordless phone use. Thus, BBB effects occur at about 1000 times lower RFR exposure levels than the US and ICNIRP limits allow.* (Salford, 2012 – Section 10)

If the blood-brain barrier is vulnerable to serious and on-going damage from wireless exposures, then we should perhaps also be looking at the blood-ocular barrier (that protects the eyes), the blood-placenta barrier (that protects the developing fetus) and the blood-gut barrier (that protects proper digestion and nutrition), and the blood-testes barrier (that protects developing sperm) to see if they too can be damaged by RFR.

EPIDEMIOLOGICAL STUDIES CONSISTENTLY SHOW ELEVATIONS IN RISK OF BRAIN CANCERS

Brain Tumors: There is a consistent pattern of increased risk of glioma and acoustic neuroma associated with use of mobile phones and cordless phones.

"Based on epidemiological studies there is a consistent pattern of increased risk for glioma and acoustic neuroma associated with use of mobile phones and cordless phones. The evidence comes mainly from two study centres, the Hardell group in Sweden and the Interphone Study Group. No consistent pattern of an increased risk is seen for meningioma. A systematic bias in the studies that explains the results would also have been the case for meningioma. The different risk pattern for tumor type strengthens the findings regarding glioma and acoustic neuroma. Meta-analyses of the Hardell group and Interphone studies show an increased risk for glioma and acoustic neuroma. Supportive evidence comes also from anatomical localisation of the tumor to the most exposed area of the brain, cumulative exposure in hours and latency time that all add to the biological relevance of an increased risk. In addition risk calculations based on estimated absorbed dose give strength to the findings. (Hardell, 2012 – Section 11)

"There is reasonable basis to conclude that RF-EMFs are bioactive and have a potential to cause health impacts. There is a consistent pattern of increased risk

for glioma and acoustic neuroma associated with use of wireless phones (mobile phones and cordless phones) mainly based on results from case-control studies from the Hardell group and Interphone Final Study results. Epidemiological evidence gives that RF-EMF should be classified as a human carcinogen.

Based on our own research and review of other evidence the existing FCC/IEE and ICNIRP public safety limits and reference levels are not adequate to protect public health. New public health standards and limits are needed.

EVIDENCE FOR GENETIC EFFECTS

Eighty six (86) new papers on genotoxic effects of RFR published between 2007 and mid-2012 are profiled. Of these, 54 (63%) showed effects and 32 (37%) showed no effects.

Forty three (43) new ELF-EMF papers and two static magnetic field papers that report on genotoxic effects of ELF-EMF published between 2007 and mid-2012 are profiled. Of these, 35 (81%) show effects and 8 (19%) show no effect.

EVIDENCE FOR NEUROLOGICAL EFFECTS

One hundred fifty five (155) new papers that report on neurological effects of RFR published between 2007 and mid-2012 are profiled. Of these, 98 (63%) showed effects and 57 (37%) showed no effects.

Sixty nine (69) new ELF-EMF papers (including two static field papers) that report on genotoxic effects of ELF-EMF published between 2007 and mid-2012 are profiled. Of these, 64 (93%) show effects and 5 (7%) show no effect.

EVIDENCE FOR CHILDHOOD CANCERS (LEUKEMIA)

With overall 42 epidemiological studies published to date power frequency EMFs are among the most comprehensively studied environmental factors. Except ionizing radiation no other environmental factor has been as firmly established to increase the risk of childhood leukemia.

Sufficient evidence from epidemiological studies of an increased risk from exposure to EMF (power frequency magnetic fields) that cannot be attributed to chance, bias or confounding. Therefore, according to the rules of IARC such exposures can be classified as a **Group 1 carcinogen (Known Carcinogen).** There is no other risk factor identified so far for which such unlikely conditions have been put forward to postpone or deny the necessity to take steps towards exposure reduction. As one step in the direction of precaution, measures should be implemented to guarantee that exposure due to transmission and distribution lines is below an average of about 1 mG. This value is arbitrary at present and only supported by the fact that in many studies this level has been chosen as a reference.

Base-station level RFR at levels ranging from less than 0.001 uW/cm2 to 0.05 uW/cm2. In 5 new studies since 2007, researchers report headaches, concentration difficulties and behavioral problems in children and adolescents; and sleep disturbances, headaches and concentration problems in adults.

MELATONIN, BREAST CANCER AND ALZHEIMER'S DISEASE

MELATONIN AND BREAST CANCER

Conclusion: Eleven (11) of the 13 published epidemiologic residential and occupational studies are considered to provide (positive) evidence that high ELF MF exposure can result in decreased melatonin production. The two negative studies had important deficiencies that may certainly have biased the results. There is sufficient evidence to conclude that long-term relatively high ELF MF exposure can result in a decrease in melatonin production. It has not been determined to what extent personal characteristics, e.g., medications, interact with ELF MF exposure in decreasing melatonin production

Conclusion: New research indicates that ELF MF exposure, in vitro, can significantly decrease melatonin activity through effects on MT1, an important melatonin receptor.

ALZHEIMER'S DISEASE

There is strong epidemiologic evidence that exposure to ELF MF is a risk factor for AD. There are now twelve (12) studies of ELF MF exposure and AD or

dementia which . Nine (9) of these studies are considered positive and three (3) are considered negative. The three negative studies have serious deficiencies in ELF MF exposure classification that results in subjects with rather low exposure being considered as having significant exposure. There are insufficient studies to formulate an opinion as to whether radiofrequency MF exposure is a risk or protective factor for AD.

There is now evidence that (i) high levels of peripheral amyloid beta are a risk factor for AD and (ii) medium to high ELF MF exposure can increase peripheral amyloid beta. High brain levels of amyloid beta are also a risk factor for AD and medium to high ELF MF exposure to brain cells likely also increases these cells' production of amyloid beta.

There is considerable in vitro and animal evidence that melatonin protects against AD. Therefore it is certainly possible that low levels of melatonin production are associated with an increase in the risk of AD.
(Davanipour and Sobel, 2012 – Section 13)

STRESS PROTEINS AND DNA AS A FRACTAL ANTENNA FOR RFR

DNA acts as a 'fractal antenna' for EMF and RFR.The coiled-coil structure of DNA in the nucleus makes the molecule react like a fractal antenna to a wide range of frequencies.The structure makes DNA particularly vulnerable to EMF damage.

The mechanism involves direct interaction of EMF with the DNA molecule (claims that there are no known mechanisms of interaction are patently false)

Many EMF frequencies in the environment can and do cause DNA changes.

The EMF-activated cellular stress response is an effective protective mechanism for cells exposed to a wide range of EMF frequencies.

EMF stimulates stress proteins (indicating an assault on the cell).

EMF efficiently harms cells at a billion times lower levels than conventional heating.

Safety standards based on heating are irrelevant to protect against EMF-levels of exposure. There is an urgent need to revise EMF exposure standards. Research has shown thresholds are very low (safety standards must be reduced to limit biological responses). Biologically-based EMF safety standards could be developed from the research on the stress response.

EVIDENCE FOR DISRUPTION OF THE MODULATING SIGNAL
HUMAN STEM CELL DNA DOES NOT ADAPT OR REPAIR

Human stem cells do not adapt to chronic exposures to non-thermal microwave (cannot repair damaged DNA), and damage to DNA in genes in other cells generally do not repair as efficiently.

Non-thermal effects of microwaves depend on variety of biological and physical parameters that should be taken into account in setting the safety standards. Emerging evidence suggests that the SAR concept, which has been widely adopted for safety standards, is not useful alone for the evaluation of health risks from non-thermal microwave of mobile communication. Other parameters of exposure, such as frequency, modulation, duration, and dose should be taken into account.Lower intensities are not always less harmful; they may be more harmful.Intensity windows exist, where bioeffects are much more powerful.

A linear, dose-response relationship test is probably invalid for testing of RFR and EMF (as is done in chemicals testing for toxicity).

Resonant frequencies may result in biological effects at very low intensities comparable to base station (cell tower) and other microwave sources used in mobile communications.
These exposures can cause health risk. The current safety standards are insufficient to protect from non-thermal microwave effects.

The data about the effects of microwave at super-low intensities and significant role of duration of exposure in these effects along with the data showing that adverse effects of non-thermal microwave from gsm/UMTS mobile phones depend on carrier frequency and type of the microwave signal suggest that microwave from base-stations/masts, wireless routers, WI-FI and other wireless devices and

exposures in common use today can also produce adverse effects at prolonged durations of exposure.

Most of the real signals that are in use in mobile communication have not been tested so far. Very little research has been done with real signals and for durations and intermittences of exposure that are relevant to chronic exposures from mobile communication. In some studies, so-called "mobile communication-like" signals were investigated that in fact were **different** from the real exposures in such important aspects as intensity, carrier frequency, modulation, polarization, duration and intermittence.

New standards should be developed based on knowledge of mechanisms of non-thermal effects. Importantly, because the signals of mobile communication are completely replaced by other signals faster then once per 10 years, duration comparable with latent period, epidemiologic studies cannot provide basement for cancer risk assessment from upcoming new signals.

In many cases, because of ELF modulation and additional ELF fields created by the microwave sources, for example by mobile phones, it is difficult to distinguish the effects of exposures to ELF and microwave. Therefore, these combined exposures and their possible cancer risks should be considered in combination.

As far as different types of microwave signals (carrier frequency, modulation, polarization, far and near field, intermittence, coherence, *etc.*) may produce different effects, cancer risks should ideally be estimated for each microwave signal separately.

The Precautionary Principle should be implemented while new standards are in progress.

It should be anticipated that some part of the human population, such as children, pregnant women and groups of hypersensitive persons could be especially sensitive to the non-thermal microwave exposures.

N. EFFECTS OF WEAK-FIELD INTERACTIONS ON NON-LINEAR BIOLOGICAL OSCILLATORS AND SYNCHRONIZED NEURAL

ACTIVITY

A unifying hypothesis for a plausible biological mechanism to account for very weak field EMF bioeffects other than cancer may lie with weak field interactions of pulsed RFR and ELF-modulated RFR as disrupters of synchronized neural activity. Electrical rhythms in our brains can be influenced by external signals. This is consistent with established weak field effects on coupled biological oscillators in living tissues. Biological systems of the heart, brain and gut are dependent on the cooperative actions of cells that function according to principles of non-linear, coupled biological oscillations for their synchrony, and are dependent on exquisitely timed cues from the environment at vanishingly small levels (Buzsaki, 2006; Strogatz, 2003). The key to synchronization is the joint actions of cells that co-operate electrically – linking populations of biological oscillators that couple together in large arrays and synchronize spontaneously. Synchronous biological oscillations in cells (pacemaker cells) can be disrupted by artificial, exogenous environmental signals, resulting in desynchronization of neural activity that regulates critical functions (including metabolism) in the brain, gut and heart and circadian rhythms governing sleep and hormone cycles (Strogatz, 1987). The brain contains a population of oscillators with distributed natural frequencies, which pull one another into synchrony (the circadian pacemaker cells). Strogatz has addressed the unifying mathematics of biological cycles and external factors disrupt these cycles (Strogatz, 2001, 2003). "*Rhythms can be altered by a wide variety of agents and that these perturbations must seriously alter brain performance*" (Buzsaki, 2006).

"*Organisms are biochemically dynamic. They are continuously subjected to time-varying conditions in the form of both extrinsic driving from the environment and intrinsic rhythms generated by specialized cellular clocks within the organism itself. Relevant examples of the latter are the cardiac pacemaker located at the sinoatrial node in mammalian hearts (1) and the circadian clock residing at the suprachiasmatic nuclei in mammalian brains (2). These rhythm generators are composed of thousands of clock cells that are intrinsically diverse but nevertheless manage to function in a coherent oscillatory state. This is the case, for instance, of the circadian oscillations exhibited by the suprachiasmatic nuclei, the period of which is known to be determined by the mean period of the individual neurons*

making up the circadian clock (3–7). The mechanisms by which this collective behavior arises remain to be understood." (Strogatz, 2001; Strogatz, 2003)

Synchronous biological oscillations in cells (pacemaker cells) can be disrupted by artificial, exogenous environmental signals, resulting in desynchronization of neural activity that regulates critical functions (including metabolism) in the brain, gut and heart and circadian rhythms governing sleep and hormone cycles. The brain contains a population of oscillators with distributed natural frequencies, which pull one another into synchrony (the circadian pacemaker cells). Strogatz has addressed the unifying mathematics of biological cycles and external factors disrupt these cycles.

EMF AND RFR MAKE CHEMICAL TOXINS MORE HARMFUL

EMF acts on the body like other environmental toxicants do (heavy metals, organic chemicals and pesticides). Both toxic chemicals and EMF may generate free radicals, produce stress proteins and cause indirect damage to DNA. Where there is combined exposure the damages may add or even synergistically interact, and result in worse damage to genes.

EMF IS SUCCESSFULLY USED IN HEALING AND DISEASE TREATMENTS

"The potential application of the up-regulation of the HSP70 gene by both ELF-EMF and nanosecond PEMF in clinical practice would include trauma, surgery, peripheral nerve damage, orthopedic fracture, and vascular graft support, among others. Regardless of pulse design, EMF technology has been shown to be effective in bone healing [5], wound repair [11] and neural regeneration [31,36,48,49,51,63,64,65,66]. In terms of clinical applica- tion, EMF-induction of elevated levels of hsp70 protein also confers protection against hypoxia [61] and aid myocardial function and survival [20,22]. Given these results, we are particularly interested in the translational significance of effect vs. efficacy which is not usually reported by designers or investigators of EMF devices. More precise description of EM pulse and sine wave parameters, including the specific EM output sector, will provide consistency and "scientific basis" in reporting findings." "The degree of electromagnetic field-effects on biological systems is known to be dependent on a number of criteria in the waveform pattern of the

exposure system used; these include frequency, duration, wave shape, and relative orientation of the fields [6,29,32,33,39,40]. In some cases pulsed fields have demonstrated increased efficacy over static designs [19,21] in both medical and experimental settings."(Madkan et al, 2009)

ELF-EMF AND RFR ARE CLASSIFIED AS POSSIBLE CANCER-CAUSING AGENTS –
WHY ARE GOVERNMENTS NOT ACTING?

The World Health Organization International Agency for Research on Cancer has classified wireless radiofrequency as a Possible Human Carcinogen (May, 2011)*. The designation applies to low-intensity RFR in general, covering all RFR-emitting devices and exposure sources (cell and cordless phones, WI-FI, wireless laptops, wireless hotspots, electronic baby monitors, wireless classroom access points, wireless antenna facilities, etc). The IARC Panel could have chosen to classify RFR as a Group 4 – Not A Carcinogen if the evidence was clear that RFR is not a cancer-causing agent. It could also have found a Group 3 designation was a good interim choice (Insufficient Evidence). IARC did neither.

NEW SAFETY LIMITS MUST BE ESTABLISHED – HEALTH AGENCIES SHOULD ACT NOW

Existing public safety limits (FCC and ICNIRP public safety limits) do not sufficiently protect public health against chronic exposure from very low-intensity exposures. If no mid-course corrections are made to existing and outdated safety limits, such delay will magnify the public health impacts with even more applications of wireless-enabled technologies exposing even greater populations around the world in daily life.

SCIENTIFIC BENCHMARKS FOR HARM PLUS SAFETY MARGIN = NEW SAFETY LIMITS THAT ARE VALID

Health agencies and regulatory agencies that set public safety standards for ELF-EMF and RFR should act now to adopt new, biologically-relevant safety limits that key to the lowest scientific benchmarks for harm coming from the recent studies, plus a lower safety margin. Existing public safety limits are too high by several orders of magnitude, if prevention of bioeffects and minimization or elimination of

resulting adverse human health effects. Most safety standards are a thousand times or more too high to protect healthy populations, and even less effective in protecting sensitive subpopulations.

SENSITIVE POPULATIONS MUST BE PROTECTED

Safety standards for sensitive populations will more likely need to be set at lower levels than for healthy adult populations. Sensitive populations include the developing fetus, the infant, children, the elderly, those with pre-existing chronic diseases, and those with developed electrical sensitivity (EHS).

PROTECTING NEW LIFE – INFANTS AND CHILDREN

Strong precautionary action and clear public health warnings are warranted immediately to help prevent a global epidemic of brain tumors resulting from the use of wireless devices (mobile phones and cordless phones). Common sense measures to limit both ELF-EMF and RFR in the fetus and newborn infant (sensitive populations) are needed, especially with respect to avoidable exposures like baby monitors in the crib and baby isolettes (incubators) in hospitals that can be modified; and where education of the pregnant mother with respect to laptop computers, mobile phones and other sources of ELF-EMF and RFR are easily instituted. Wireless laptops and other wireless devices should be strongly discouraged in schools for children of all ages.

STANDARD OF EVIDENCE FOR JUDGING THE SCIENCE

The standard of evidence for judging the scientific evidence should be based on good public health principles rather than demanding scientific certainty before actions are taken.

WIRELESS WARNINGS FOR ALL

The continued rollout of wireless technologies and devices puts global public health at risk from unrestricted wireless commerce unless new, and far lower exposure limits and strong precautionary warnings for their use are implemented.

EMF AND RFR ARE PREVENTABLE TOXIC EXPOSURES

We have the knowledge and means to save global populations from multi-

generational adverse health consequences by reducing both ELF and RFR exposures. Proactive and immediate measures to reduce unnecessary EMF exposures will lower disease burden and rates of premature death.

DEFINING A NEW 'EFFECT LEVEL' FOR RFR

On a precautionary public health basis, a reduction from the BioInitiative 2007 recommendation of 0.1 uW/cm2 (or one-tenth of a microwatt per square centimeter) for cumulative outdoor RFR down to something three orders of magnitude lower (in the low nanowatt per square centimeter range) is justified.

A scientific benchmark of 0.003 uW/cm2 or three nanowatts per centimeter squared for 'lowest observed effect level' for RFR is based on mobile phone base station-level studies. Applying a ten-fold reduction to compensate for the lack of long-term exposure (to provide a safety buffer for chronic exposure, if needed) or for children as a sensitive subpopulation yields a 300 to 600 picowatts per square centimeter precautionary action level. This equates to a 0.3 nanowatts to 0.6 nanowatts per square centimeter as a reasonable, precautionary action level for chronic exposure to pulsed RFR.

These levels may need to change in the future, as new and better studies are completed. We leave room for future studies that may lower or raise today's observed 'effects levels' and should be prepared to accept new information as a guide for new precautionary actions.

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 17

Description:
International Agency for Research in Cancer of the World Health Organization (IARC) report of May 31, 2011.

This exhibit will show:
The IARC classified electromagnetic radiation as a group 2B carcinogen.

This is important because:
Further confirmation that electromagnetic radiation can cause cancer.

International Agency for Research on Cancer

World Health Organization

PRESS RELEASE
N° 208

31 May 2011

IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as **possibly carcinogenic to humans (Group 2B)**, based on an increased risk for **glioma**, a malignant type of brain cancer[1], associated with wireless phone use.

Background

Over the last few years, there has been mounting concern about the possibility of adverse health effects resulting from exposure to radiofrequency electromagnetic fields, such as those emitted by wireless communication devices. The number of mobile phone subscriptions is estimated at **5 billion globally**.

From **May 24–31 2011, a Working Group of 31 scientists from 14 countries has been meeting at IARC in Lyon, France, to assess the potential carcinogenic hazards from exposure to radiofrequency electromagnetic fields**. These assessments will be published as Volume 102 of the IARC *Monographs*, which will be the fifth volume in this series to focus on physical agents, after **Volume 55** (Solar Radiation), **Volume 75** and **Volume 78** on ionizing radiation (X-rays, gamma-rays, neutrons, radio-nuclides), and **Volume 80 on non-ionizing radiation (extremely low-frequency electromagnetic fields)**.

The IARC Monograph Working Group discussed the possibility that these exposures might induce long-term health effects, in particular an increased risk for cancer. This has relevance for public health, particularly for users of mobile phones, as the number of users is large and growing, particularly among young adults and children.

The IARC Monograph Working Group discussed and evaluated the available literature on the following exposure categories involving radiofrequency electromagnetic fields:

- occupational exposures to radar and to microwaves;
- environmental exposures associated with transmission of signals for radio, television and wireless telecommunication; and
- personal exposures associated with the use of wireless telephones.

International experts shared the complex task of tackling the **exposure data, the studies of cancer in humans, the studies of cancer in experimental animals**, and the **mechanistic and other relevant data**.

[1] **237 913 new cases of brain cancers** (all types combined) occurred around the world in 2008 (gliomas represent 2/3 of these). Source: **Globocan 2008**

IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Results

The evidence was reviewed critically, and overall evaluated as being *limited*[2] among users of wireless telephones for glioma and acoustic neuroma, and *inadequate*[3] to draw conclusions for other types of cancers. The evidence from the occupational and environmental exposures mentioned above was similarly judged inadequate. The Working Group did not quantitate the risk; however, one study of past cell phone use (up to the year 2004), showed a 40% increased risk for gliomas in the highest category of heavy users (reported average: 30 minutes per day over a 10-year period).

Conclusions

Dr Jonathan Samet (University of Southern California, USA), overall Chairman of the Working Group, indicated that "the evidence, while still accumulating, is strong enough to support a conclusion and the **2B classification**. The conclusion means that there could be some risk, and therefore we need to keep a close watch for a link between cell phones and cancer risk."

"Given the potential consequences for public health of this classification and findings," said IARC Director Christopher Wild, "it is important that additional research be conducted into the long-term, heavy use of mobile phones. Pending the availability of such information, it is important to take pragmatic measures to reduce exposure such as hands-free devices or texting. "

The Working Group considered hundreds of scientific articles; the complete list will be published in the Monograph. It is noteworthy to mention that several recent in-press scientific articles[4] resulting from the **Interphone study** were made available to the working group shortly before it was due to convene, reflecting their acceptance for publication at that time, and were included in the evaluation.

A concise report summarizing the main conclusions of the IARC Working Group and the evaluations of the carcinogenic hazard from radiofrequency electromagnetic fields (including the use of mobile telephones) will be published in **The Lancet Oncology in its July 1 issue, and in a few days online.**

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[2] '***Limited evidence of carcinogenicity***': A positive association has been observed between exposure to the agent and cancer for which a causal interpretation is considered by the Working Group to be credible, but chance, bias or confounding could not be ruled out with reasonable confidence.

[3] '***Inadequate evidence of carcinogenicity***': The available studies are of insufficient quality, consistency or statistical power to permit a conclusion regarding the presence or absence of a causal association between exposure and cancer, or no data on cancer in humans are available.

[4] a. 'Acoustic neuroma risk in relation to mobile telephone use: results of the INTERPHONE international case-control study' (the Interphone Study Group, in Cancer Epidemiology, *in press*)
b. 'Estimation of RF energy absorbed in the brain from mobile phones in the Interphone study' (Cardis et al., Occupational and Environmental Medicine, *in press*)
c. 'Risk of brain tumours in relation to estimated RF dose from mobile phones – results from five Interphone countries' (Cardis et al., Occupational and Environmental Medicine, *in press*)
d. 'Location of Gliomas in Relation to Mobile Telephone Use: A Case-Case and Case-Specular Analysis' (American Journal of Epidemiology, May 24, 2011. [Epub ahead of print].

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Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 18

Description:
Top experimental and epidemiological studies up to 4/27/2017- on dangers of non-ionizing radiation.

This exhibit will show:
Non-ionizing radiation causes cancers and also interferes with cognition.

This is important because:
this supports my assertion that smart meter radiation is pathogenic.

https://ehtrust.org/science/top-experimental-epidemiological-studies/

Top Experimental and Epidemiological Studies

Top Experimental and Epidemiological Studies on Wireless Radiation

Last updated April 27, 2017

Prologue: Epidemiology only proves the past; Experimental/Toxicology Studies indicate future risks/harms

From time to time people ask, "what are the studies I should share with people who state that there is "no evidence?" On this page we have a small sampling of studies that are the evidence.

Cancer and Cancer Promotion:

Glioma Epidemiology

Momoli, F., et al. "Probabilistic multiple-bias modelling applied to the Canadian data from the INTERPHONE study of mobile phone use and risk of glioma, meningioma, acoustic neuroma, and parotid gland tumors." *American Journal of Epidemiology,* 2017.

Report confirms that Canadians who have used cellphones for 558 hours or more have more than a doubled risk of brain cancer. These important findings strengthen the association between glioma, an aggressive brain cancer, and cell phone use.

Yang, M., et al. "Mobile phone use and glioma risk: A systematic review and meta-analysis." *PLoS One*, vol. 12, no. 5, 2017.

Meta-analysis found significant positive association between long-term mobile phone use (minimum, 10 years) and glioma. And there was a significant positive association between long-term ipsilateral mobile phone use and the risk of glioma. Long-term mobile phone use was associated with 2.22 times greater odds of low-grade glioma occurrence.

Carlberg, Michael and Lennart Hardell. "Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill Viewpoints from 1965 on Association or Causation." *BioMed Research International,* vol. 2017, 2017.

When considered vis a vis deductive public health principles, the combined evidence from epidemiology and laboratory studies indicate that meningioma and glioma in the temporal lobe can be considered to be caused by cumulative RF radiation exposure. Experimental findings that RF increases production of reactive oxygen species suggest a potential mechanism.

Prasad, M., et al. "Mobile phone use and risk of brain tumours: a systematic review of association between study quality, source of funding, and research outcomes." *Neurological Sciences*, 2017.

Studies with higher quality are more likely to find higher risk of brain tumour, while lower quality studies tend to indicate lower risk/protection

Grell, Kathrine, et al. "The Intracranial Distribution of Gliomas in Relation to Exposure From Mobile Phones: Analyses From the INTERPHONE Study." *American Journal of Epidemiology*, vol. 184, no. 11 2016, pp. 818-28.

Similar to earlier results, we found a statistically significant association between the intracranial distribution of gliomas and the self-reported location of the phone. When we accounted for the preferred side of the head not being exclusively used for all mobile phone calls, the results were similar.

Hardell, Lennart and Michael Carlberg. "Mobile phone and cordless phone use and the risk for glioma–Analysis of pooled case-control studies in Sweden, 1997–2003 and 2007–2009." *Pathophysiology*, vol. 22, no. 1, 2015, pp. 1-13.

Mobile phone and cordless phone use increased the risk of glioma, with highest risk in the >15–20 years latency group Highest ORs overall were found for ipsilateral mobile or cordless phone use, while the highest risk was found for glioma in the temporal lobe. First use of mobile or cordless phone before the age of 20 gave higher OR for glioma than in later age groups.

Carlberg, Michael and Lennart Hardell. "Decreased survival of glioma patients with astrocytoma grade IV (glioblastoma multiforme) associated with long-term use of mobile and cordless phones." *International Journal of Environmental Research and Public Health*, vol. 11, no. 10, 2014, pp. 10790-805.

Elevated HR (decreased survival) for the most malignant glioma type, astrocytoma grade IV, was found for long-term use of mobile and cordless phones. Highest HR was found for cases with first use before the age of 20 years.

Coureau, Gaëlle, et al. "Mobile phone use and brain tumours in the CERENAT case-control study." *Occupational and Environmental Medicine*, vol. 71, no. 7, 2014, pp. 514-22.

No association with brain tumours was observed when comparing regular mobile phone users with non-users, however, the positive association was statistically significant in the heaviest users when considering life-long cumulative duration and number of calls for gliomas. Risks were higher for gliomas, temporal tumours, occupational and urban mobile phone use.

Absorbed Exposures to Anatomical Regions of the Brain and Increased Brain Cancer Incidence Rates

Zada, Gabriel, et al. "Incidence trends in the anatomic location of primary malignant brain tumors in the United States: 1992–2006." *World Neurosurgery*, vol. 77, no. 3, 2012, pp. 518-24.

Data from 3 major cancer registries demonstrate increased incidences of glioblastoma multiforme in the frontal lobe, temporal lobe, and cerebellum, despite decreased incidences in other brain regions. Although this may represent an effect of diagnostic bias, the incidence of both large and small tumors increased in these regions.

Cardis, Elisabeth, et al. "Risk of brain tumours in relation to estimated RF dose from mobile phones: results from five Interphone countries." *Occupational and Environmental Medicine*, vol. 68, no. 9, 2011, pp. 631-40.

Authors found suggestions of an increased risk of glioma in long-term mobile phone users with high RF exposure and of similar, but apparently much smaller, increases in meningioma risk.

Schwann Cell Cancers

Moon et al. "Association between vestibular schwannomas and mobile phone use." *Tumour Biology*, vol. 35, no. 1, 2014, pp. 581-7 .

Acoustic neuromas (vestibular schwannomas) occur more frequently on used ear of mobile phones and tumor volume showed a strong correlation with amount of mobile phone use.

Benson, V.S., et al. "Mobile phone use and risk of brain neoplasms and other cancers: prospective study." *International Journal of Epidemiology*, vol. 42, no. 3, 2013, pp. 792-802.

Acoustic neuromas were 2 1/2 times more likely in long term users compared to never users (10+ years: RR = 2.46, 95% CI = 1.07-5.64, P = 0.03), with the risk increasing with duration of use (trend among users, P = 0.03).

Hardell, et al. "Pooled analysis of case-control studies on acoustic neuroma diagnosed 1997-2003 and 2007-2009 and use of mobile and cordless phones." *International Journal of Oncology*, vol. 43, no. 4, 2013, pp. 1036-44.

This study confirmed previous results demonstrating an association between mobile and cordless phone use and acoustic neuroma.

Hardell, L., M. Carlberg and Mild K. Hansson. "Use of mobile phones and cordless phones is associated with increased risk for glioma and acoustic neuroma." *Pathophysiology*, vol. 20, no. 2, 2012, pp. 85-110.

Regarding acoustic neuroma, ipsilateral mobile phone use in the latency group ≥10 years gave OR=1.81, 95% CI=0.73-4.45. For ipsilateral cumulative use ≥1640 h OR=2.55, 95% CI=1.50-

4.40 was obtained. Also use of cordless phones increased the risk for glioma and acoustic neuroma in the Hardell group studies.

Interphone Study Group. "Acoustic neuroma risk in relation to mobile telephone use: results of the INTERPHONE international case-control study." *Cancer Epidemiology*, vol. 35, no. 5, 2011, pp. 453-64.

In general, ORs were not greater in subjects who reported usual phone use on the same side of the head as their tumour than in those who reported it on the opposite side, but it was greater in those in the 10th decile of cumulative hours of use.

Hardell et al. "Mobile phones, cordless phones and the risk for brain tumours." *International Journal of Oncology*, vol. 35, no. 1, 2009, pp. 5-17.

For acoustic neuroma, the highest OR was found for ipsilateral use and >10 year latency, for mobile phone OR=3.0, 95% CI=1.4-6.2 and cordless phone OR=2.3, 95% CI=0.6-8.8.

Schoemaker et al. "Mobile phone use and risk of acoustic neuroma: results of the Interphone case-control study in five North European countries." *British Journal of Cancer*, vol. 93, no. 7, 2005, pp. 842-8.

Risk of a tumour on the same side of the head as reported phone use was raised for use for 10 years or longer (OR = 1.8, 95% CI: 1.1-3.1). The study suggests that there is no substantial risk of acoustic neuroma in the first decade after starting mobile phone use. However, an increase in risk after longer term use or after a longer lag period could not be ruled out.

Lonn et al. "Mobile phone use and the risk of acoustic neuroma." *Epidemiology*, vol.15, no. 6, 2004, pp. 653-9

The overall odds ratio for acoustic neuroma associated with regular mobile phone use was 1.0 (95% confidence interval = 0.6-1.5). Ten years after the start of mobile phone use the estimates relative risk increased to 1.9 (0.9-4.1); when restricting to tumors on the same side of the head as the phone was normally used, the relative risk was 3.9 (1.6-9.5).

Thyroid Cancer

Lim et al. "Trends in Thyroid Cancer Incidence and Mortality in the United States, 1974-2013." *JAMA*, vol. 317, no. 13, 2017, pp. 1338-48.

Among patients in the United States diagnosed with thyroid cancer from 1974-2013, the overall incidence of thyroid cancer increased 3% annually, with increases in the incidence rate and thyroid cancer mortality rate for advanced-stage papillary thyroid cancer. These findings are consistent with a true increase in the occurrence of thyroid cancer in the United States.

Carlberg, Michael, et al. "Increasing incidence of thyroid cancer in the Nordic countries with main focus on Swedish data." *BMC Cancer*, vol. 16, no. 426, 2016.

The main finding of this register based study was an increasing incidence of thyroid cancer in Sweden during the whole study period 1970–2013 in both women and men, although not statistically significant in men. In both genders the incidence increased during the more recent study period, from 2001 in women and from 2005 in men.

Parotid Gland Cancers

Sadetzki, Siegal, et al. "Cellular Phone Use and Risk of Benign and Malignant Parotid Gland Tumors–A Nationwide Case-Control Study." *American Journal of Epidemiology*, vol. 167, no. 4, 2007, pp. 457-67.

Our results suggest a relation between long-term and heavy cellular phone use and parotid gland tumors. This association was seen in analyses restricted to regular users, analyses of laterality of phone use, and analyses of area of main use.

Cancer and Cancer Promotion – Epidemiology

Momoli, F., et al. "Probabilistic multiple-bias modelling applied to the Canadian data from the INTERPHONE study of mobile phone use and risk of glioma, meningioma, acoustic neuroma, and parotid gland tumors." *American Journal of Epidemiology*, 2017.

Since the 13-nation Interphone study was published in 2010, several methods papers have been published that reanalyze the data to correct for biases in the original paper. The authors of this study found that the risk estimate for glioma among the highest quartile of cell phone users increased after adjustment. Risk estimates for other types of head tumors did not change.

Siqueira, Elisa Carvalho, et al. "Cell phone use is associated with an inflammatory cytokine profile of parotid gland saliva." *Journal of Oral Pathology & Medicine*, vol. 45, no. 9, 2016, pp. 682-6.

Cell phone exposure was associated with an increased level of IL-1β (a pro-inflammatory cytokine) and decreased IL-10 level (anti-inflammatory cytokine) in the exposed parotid gland saliva .

Sadetzki, Siegal, et al. "The MOBI-Kids Study Protocol: Challenges in Assessing Childhood and Adolescent Exposure to Electromagnetic Fields from Wireless Telecommunication Technologies and Possible Association with Brain Tumor Risk." *Frontiers in Public Health*, vol. 2, no. 124, 2014, pp. 1-10.

MOBI-Kids, a multinational case–control study, investigates the potential effects of childhood and adolescent exposure to EMF from mobile communications technologies on brain tumor risk in 14 countries. This manuscript discusses the design of MOBI-Kids and describes the challenges and approaches chosen to address them.

IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. "IARC monographs on the evaluation of carcinogenic risks to humans. Non-Ionizing Radiation, Part 2:

Radiofrequency Electromagnetic Fields." IARC Monographs on the Evaluation of Carcinogenic Risks to Humans/World Health Organization, International Agency for Research on Cancer vol. 102, 2013.

EXPERIMENTAL FINDINGS

The NTP Study Shows Cancer and Cancer Promotion

Wyde, Michael, et al. "Report of Partial findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposure)." bioRxiv, no. 055699, 2016. (National Toxicology Program Video Presentation that includes genotoxicity results June 2016)

Exposures to cell phone equivalent RFR began for rats in-utero and during adolescence for mice, continuing through young adulthood (subchronic) or for 2 years (chronic). Researchers observed increased incidence of gliomas as well as schwannomas in both sexes, as well as significantly more rare, pre-cancerous changes in the glial cells of the brain in both sexes, while not a single one of the unexposed control animals developed these same abnormal brain cells. Male rats exposed to all levels of CDMA developed exceptional numbers of damaged, pre-cancerous brain cells (glial hyperplasia). Body weights at birth and throughout lactation in rat pups exposed in utero tended to be lower than controls. Comet assay summaries revealed statistically significant evidence of DNA damage from nonthermal exposure in mice and rats within the frontal cortex (male & female rats, male male), hippocampus (male rats), liver (male rats, female mice), and blood (male rats, female mice). The increased types of tumors found in NTP's research rats parallel the types of increased tumors found in human long term users of cell phones.

Lerchl, Alexander, et al. "Tumor promotion by exposure to radiofrequency electromagnetic fields below exposure limits for humans." *Biochemical and Biophysical Research Communications*, vol. 459, no. 4, 2015, pp. 585-90.

Numbers of tumors of the lungs and livers in exposed animals were significantly higher than in sham-exposed controls. In addition, lymphomas were also found to be significantly elevated by exposure.

Experimental Study of Pregnancy with Prenatal Exposure Affects Brain and Behavior

Aldad, Tamir S., et al. "Fetal radiofrequency radiation exposure from 800-1900 Mhz-rated cellular telephones affects neurodevelopment and behavior in mice." *Scientific Reports*, vol. 2, no. 312, 2012.

In a study examining the association between prenatal cell phone use and hyperactivity in children, researchers found that mice exposed in-utero were hyperactive and had impaired memory, and in addition, recordings of excitatory postsynaptic currents revealed that these behavioral changes were due to altered neuronal developmental programming.

Kim, Ju Hwan, et al. "Long-term exposure to 835 MHz RF-EMF induces hyperactivity, autophagy and demyelination in the cortical neurons of mice." *Scientific Reports*, vol. 7, 2017.

The neuronal effects of 835 MHz RF-EMF on the cerebral cortex of the mouse brain at 4.0 W/kg for 5 hours/day for 12 weeks included induction of autophaygy genes, production of proteins, accumulation of autolysosome, demyelination in cortical neurons and hyperactivity-like behavior.

Breast Cancer Case Series Report

West JG, Kapoor NS, Liao S, Chen JW, Bailey L, Nagourney RA. (2013). Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones. *Case Reports in Medicine*. Volume 2013, Article ID 354682.

Researchers report a four case series of women-ages from 21 to 39-with multifocal invasive breast cancer, all which regularly carried their cell phones against their breast for up to 10 hours/day for several years, had no family history of breast cancer, tested negative for BRCA1 and BRCA2, and have highly similar case pathology and morphology.

Damage to Male Reproduction

Houston, B.J., et al. "The effects of radiofrequency electromagnetic radiation on sperm function." *Reproduction*, vol. 152, no. 2, 2016, pp. R263-76.

Documented impacts of RF-EMR on the male reproductive system include decreased sperm motility, elevated levels of reactive oxygen species, increased DNA damage, and decreased antioxidant levels.

Adams, Jessica A., et al. "Effect of mobile telephones on sperm quality: A systematic review and meta-analysis." *Environmental International*, vol. 70, 2014, pp. 106-12.

Following a systematic review and meta-analysis to determine whether exposure to RF-EMR emitted from mobile phones affects human sperm quality, researchers found that exposure to mobile phone was associated with reduced sperm motility and overall quality.

De Iuliis, Geoffry N., et al. "Mobile phone radiation induces reactive oxygen species production and DNA damage in human spermatozoa in vitro." *PloS one*, vol. 4, no. 7, 2009.

RF-EMR in both the power density and frequency range of mobile phones (1.8 GHz covering a SAR range from 0.4 to 27.5 W/kg) were shown to enhance mitochondrial reactive oxygen species generation, decrease the motility and vitality, stimulating DNA base adduct formation and ultimately cause DNA fragmentation within the human spermatozoa

Atasoy, Halil I., et al. "Immunohistopathologic demonstration of deleterious effects on growing rat testes of radiofrequency waves emitted from conventional Wi-Fi devices." *Journal of Pediatric Urology*, vol. 9, no. 2, 2013, pp. 223-9.

Researchers observed significant increases in serum 8-hydroxy-2′-deoxyguanosine levels and 8-hydroxyguanosine staining in the testes of the experimental group indicating DNA damage due to exposure ($p < 0.05$) and effects on enzyme activity.

Avendano, Conrado, et al. "Use of laptop computers connected to internet through Wi-Fi decreases human sperm motility and increases sperm DNA fragmentation." *Fertility and Sterility*, vol. 97, no. 1, 2012, pp. 39-45.

Sperm samples, mostly normozoospermic, exposed ex vivo during 4 hours to a wireless internet-connected laptop showed a significant decrease in progressive sperm motility and an increase in sperm DNA fragmentation.

Sepehrimanesh, Masood and Devra Lee Davis. "Proteomic impacts of electromagnetic fields on the male reproductive system." *Comparative Clinical Pathology*, vol. 26, no. 2, 2017, pp. 309-13.

This paper reviews proteomic experimental and clinical evidence that EMF acts as a male-mediated teratogen and contributor to infertility.

Neurodevelopment and Neurological

Volkow, Nora D., et al. "Effects of cell phone radiofrequency signal exposure on brain glucose metabolism." *JAMA*, vol. 305, no. 8, 2011, pp. 808-13.

Researchers concluded that compared to individuals with no exposure, 50-minute cell phone exposure was associated with increased brain glucose metabolism in the region closest to the antenna.

Bas, O., et al. "Chronic prenatal exposure to the 900 megahertz electromagnetic field induces pyramidal cell loss in the hippocampus of newborn rats." *Toxicology and Industrial Health*, vol. 25, no. 6, 2009, pp. 377-84.

It was found that 900 megahertz of electromagnetic field significantly reduced the total pyramidal cell number in the cornu ammonis of the electromagnetic field group ($P < 0.001$).

Deshmukh, Pravin Suryakantrao, et al. "Cognitive impairment and neurogenotoxic effects in rats exposed to low-intensity microwave radiation." *International Journal of Toxicology*, vol. 34, no. 3, 2015, pp. 284-90.

Rats exposed to low-intensity microwave radiation showed declined cognitive function, elevated HSP70 level, and DNA damage within the brain, compared to control animals.

Herbert, Martha R., and Cindy Sage. "Autism and EMF? Plausibility of a pathophysiological link–Part I." *Pathophysiology*, vol. 20, no. 3, 2013, pp. 191-209.

Authors review pathophysiological damage to core cellular processes that are associated both with autism spectrum conditions and with biological effects of EMF/RFR exposures that contribute to chronically disrupted homeostasis

Herbert, Martha R., and Cindy Sage. "Autism and EMF? Plausibility of a pathophysiological link part II." *Pathophysiology*, vol. 20, no. 3, 2013, pp. 211-34.

Authors document how behaviors in autism spectrum conditions may emerge from alterations of electrophysiological oscillatory synchronization, how EMF/RFR could contribute to these by de-tuning the organism, and policy implications of these vulnerabilities.

Odaci, E., O. Bas, and S. Kaplan. "Effects of prenatal exposure to a 900MHz electromagnetic field on the dentate gyrus of rats: a stereological and histopathological study." *Brain Research*, no. 1238, 2008, pp. 224-9.

The results showed that prenatal EMF exposure caused a decrease in the number of granule cells in the dentate gyrus of the rats ($P<0.01$), suggesting that prenatal exposure to a 900 MHz EMF affects the development of the dentate gyrus granule cells in the rat hippocampus.

Sonmez, O.F., et al. "Purkinje cell number decreases in the adult female rat cerebellum following exposure to 900 MHz electromagnetic field." *Brain Research*, no. 1356, 2010, pp. 95-101.

Results showed that the total number of Purkinje cells in the cerebellum of the EMFG was significantly lower than those of CG ($p<0.004$) and SG ($p<0.002$), suggesting that long duration exposure to 900 MHz EMF leads to decreases of Purkinje cell numbers in the female rat cerebellum.

Tang, Jun, et al. "Exposure to 900MHz electromagnetic fields activates the mkp-1/ERK pathway and causes blood-brain barrier damage and cognitive impairment in rats." *Brain Research*, no. 1601, 2015, pp. 92-101.

Results demonstrate that exposure to 900 MHz EMF radiation for 28 days can significantly impair spatial memory and damage BBB permeability in rat by activating the mkp-1/ERK pathway.

Environmental Exposures Can Enhance Damage from EMFs

Kostoff, Ronald N., and Clifford GY Lau. "Combined biological and health effects of electromagnetic fields and other agents in the published literature." *Technological Forecasting and Social Change* vol. 80, no. 7, 2013, no. 1331-49.

The present study examined the scope of the combined effects; i.e., identified effects on biological systems from combined exposure to electromagnetic fields/radiation and at least one other agent, concluding that EMF health impacts increase substantially when EMFs function as co-promoters and thus inclusion of co-promoters is essential for modeling real-world effects.

Byun, Yoon-Hwan, et al. "Mobile phone use, blood lead levels, and attention deficit hyperactivity symptoms in children: a longitudinal study." *PLoS One*, vol. 8, no. 3, 2013.

The results suggest that simultaneous exposure to lead and RF from mobile phone use was associated with increased ADHD symptom risk, although possible reverse causality could not be ruled out.

EMF Can Interfere with Cognition

Papageorgiou, Charalabos C., et al. "Effects of wi-fi signals on the p300 component of event-related potentials during an auditory hayling task." *Journal of Integrative Neuroscience*, vol. 10, no. 2, 2011, pp. 189-202.

The present study focused on the possible gender-related effects of Wi-Fi electromagnetic fields (EMF) on the attention and working memory operations of the brain, concluding that Wi-Fi exposure may exert gender-related alterations on neural activity associated with the amount of attentional resources engaged during a linguistic test.

Ntzouni, Maria P, et al. "Transient and cumulative memory impairments induced by GSM 1.8 GHz cell phone signal in a mouse model." *Electromagnetic Biology and Medicine*, vol. 32, no. 1, 2013, pp. 95-120.

The data suggest that visual information processing mechanisms in hippocampus, perirhinal and entorhinal cortex are gradually malfunctioning upon long-term daily exposure, a phenotype that persists for at least 2 weeks after interruption of radiation, returning to normal memory performance levels 4 weeks later.

Theoretical and Experimental Evidence that RF Induces Specific Mechanisms

Barnes, Frank, and Ben Greenebaum. "Some Effects of Weak Magnetic Fields on Biological Systems: RF fields can change radical concentrations and cancer cell growth rates." *IEEE Power Electronics Magazine*, vol. 3, no. 1, 2016, pp. 60-8.

Authors describe historical and recent concerns raised about the possible biological effects of nonionizing radiation of many different types on humans or other organisms, detailing these effects and possible mechanisms behind their induction of cellular damage.

Belyaev, Igor Y., et al. "Microwaves from UMTS/GSM mobile phones induce long-lasting inhibition of 53BP1/γ-H2AX DNA repair foci in human lymphocytes." *Bioelectromagnetics*, vol. 30, no. 2, 2009, pp. 129-41.

Researchers described frequency-dependent effects of mobile phone microwaves on human lymphocytes from persons reporting hypersensitivity to electromagnetic fields and healthy persons, concluding that microwaves from universal global telecommunications system (UMTS) mobile phones affect chromatin and inhibit formation of DNA double-strand breaks in human lymphocytes from both hypersensitive and healthy persons.

Yakymenko, Igor, et al. "Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation." *Electromagnetic Biology and Medicine*, vol. 35, no. 2, 2016, pp. 186-202.

In conclusion, our analysis demonstrates that low-intensity RFR is an expressive oxidative agent for living cells with a high pathogenic potential and that the oxidative stress induced by RFR exposure should be recognized as one of the primary mechanisms of the biological activity of this kind of radiation.

Pall, M. Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. *Journal of Cellular and Molecular Medicine*, vol. 17, no. 8, 2013 pp. 958-965

This article reviews a substantially supported set of targets, voltage-gated calcium channels, whose stimulation produces non-thermal EMF responses by humans/higher animals with downstream effects involving Ca2+/calmodulin-dependent nitric oxide increases, which may explain therapeutic and pathophysiological effects of electromagnetic fields.

Hinrikus, Hiie, et al. "Mechanism of low-level microwave radiation effect on nervous system." *Electromagnetic Biology and Medicine*, 2016.

Results support the proposed model of excitation by low-level microwave radiation based on the influence of water polarization on hydrogen bonding forces between water molecules, caused by this the enhancement of diffusion and consequences on neurotransmitters transit time and neuron resting potential.

Leszczynski, Dariusz, et al. "Non-thermal activation of the hsp27/p38MAPK stress pathway by mobile phone radiation in human endothelial cells: Molecular mechanism for cancer-and blood-brain barrier-related effects." *Differentiation*, vol. 70, no. 2-3, 2002, pp. 120-9.

Results obtained demonstrate that 1-hour non-thermal exposure of EA.hy926 cells changes the phosphorylation status of numerous, yet largely unidentified, proteins.

Markovà, Eva, Lars OG Malmgren, and Igor Y. Belyaev. "Microwaves from mobile phones inhibit 53BP1 focus formation in human stem cells more strongly than in differentiated cells: possible mechanistic link to cancer risk." *Environ Health Perspect*, vol. 118, no. 3, 2010, pp. 394-9.

Microwaves from mobile phones inhibited formation of 53BP1 foci in human primary fibroblasts and mesenchymal stem cells. These data parallel our previous findings for human lymphocytes.

Pall, Martin L. "Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression." Journal of Chemical Neuroanatomy, vol. 75, pt. B, 2016, pp. 43-51.

Results show microwave EMFs activate voltage-gated Ca2+ channels (VGCCs) concentrated in the brain, and VGCC activity causes widespread neuropsychiatric effects in humans (genetic studies).

ELF-EMF Studies That Show Synergistic Effect

Soffritti, Morando, et al. "Synergism between sinusoidal-50 Hz magnetic field and formaldehyde in triggering carcinogenic effects in male Sprague–Dawley rats." *American Journal of Industrial Medicine*, vol. 59, no. 7, 2016, pp. 509-21.

Soffritti, Morando, et al. "Life-span exposure to sinusoidal-50 Hz magnetic field and acute low-dose γ radiation induce carcinogenic effects in Sprague-Dawley rats." *International Journal of Radiation Biology*, vol. 92, no. 4, 2016, pp. 202-14.

Compared to untreated controls, exposure to MF and formaldehyde causes in males a statistically significant increased incidence of malignant tumors ($P \leq 0.01$), thyroid C-cell carcinomas ($P \leq 0.01$), and hemolymphoreticular neoplasias ($P \leq 0.05$). No statistically significant differences were observed among female groups.

Exposure Assessment Shows Greater Absorption into Younger Smaller Brains

Fernández-Rodríguez, Claudio Enrique, Alvaro Augusto Almeida De Salles, and Devra Lee Davis. "Dosimetric Simulations of Brain Absorption of Mobile Phone Radiation–The Relationship Between psSAR and Age." *IEEE Access* vol. 3, 2015, pp. 2425-30.

If the peak spatial SAR (psSAR) is modeled in the entire head, as current testing standards recommend, the results for adults and children are equivalent, however the present study uses anatomically based evaluations which rely on Finite-difference time-domain simulations of different tissues within the brain, which confirm that the psSAR in a child's brain is higher than in an adult's brain and thus higher doses are likely to have more severe implications in the young brain.

Gandhi, Om P., et al. "Exposure limits: the underestimation of absorbed cell phone radiation, especially in children." *Electromagnetic Biology and Medicine*, vol. 31, no. 1, 2012, pp. 34-51. Includes detailed history of FDA/FCC test standard evolution

Researchers indicate that the existing cell phone certification process is outdated and greatly underestimates the SAR for typical phone users, especially children, and thus call for a new certification process that incorporates different modes of use, head size, tissue properties, and anatomically based models.

Bakker, J. F., et al. "Assessment of Induced SAR in children Exposed to Electromagnetic Plane Waves Between 10 MHz and 5.6 GHz." *Physics in Medicine and Biology*, vol. 55, no. 11, 2010, pp. 3115-30.

Researchers found that the basic restriction on the SAR(wb) is occasionally exceeded for children, up to a maximum of 45% in small children. The maximum SAR(10g) values, usually found at body protrusions, remain under the limit for all scenarios studied.

Ferreira, Juliana Borges, and Álvaro Augusto Almeida de Salles. "Specific Absorption Rate (SAR) in the head of Tablet users." *7th Latin American Workshop On Communications*, 2015

The psSAR simulations in heterogeneous models (adult and child) show higher levels in the children model. The possible reasons for the higher SAR estimated in the child head model compared with adult model can be due to different reasons (e.g. thinner skull, higher dielectric parameters, smaller dimensions, etc.).

Gultekin, David H., and Lothar Moeller. "NMR imaging of cell phone radiation absorption in brain tissue." *Proceedings of the National Academy of Sciences*, vol. 110, no. 1, 2013, pp. 58-63.

A method is described for measuring absorbed electromagnetic energy radiated from cell phone antennae into ex vivo brain tissue.

Morris, Robert D., Lloyd L. Morgan, and Devra L. Davis. "Children Absorb Higher Doses of Radio Frequency Electromagnetic Radiation From Mobile Phones Than Adults." *IEEE Access*, vol. 3, 2015, pp. 2379-87.

Authors discuss the differences between exposure and tissue absorption and re-examine the results presented by Foster and Chou. Based upon the review, authors suggest an alternative interpretation of the published literature.

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Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 19

Description:
Doctor Leif Salford reports on cell phone radiation. His research.

This exhibit will show:
Exposure to even low levels of microwave radiation damaged the blood brain barrier.

This is important because:
Smart meter radiation at all levels causes damage to living beings.

THE WORK OF LEIF SALFORD

Since Allan Frey, whose work is also highlighted here, discovered in 1975 that microwave radiation causes the blood-brain barrier to leak, at least a dozen laboratories throughout the world have corroborated this effect. Currently the most active research of this kind is being done at Lund University in Sweden.

Dr. Leif Salford is a neurosurgeon at Lund University Hospital, and Chairman of the Department of Neurosurgery. Since 1988 he has led a team of researchers that have exposed thousands of laboratory rats to microwave radiation from various sources. Since the late 1990s they have used mobile telephones as the source of this radiation.

Their results have been consistent and alarming: not only does radiation from a cell phone damage the blood-brain barrier, but it does so at even when the exposure level is reduced a thousandfold. Even more disturbingly, and contrary to what was expected, the damage to the blood-brain barrier worsened when the experimenters reduced the exposure level. The implies that SAR ratings for cell phones may be worthless and that it may not be possible to make cell phones safer by reducing their power.

In laboratory rats, Salford's team has demonstrated that blood-brain barrier leakage occurs after only two minutes of exposure. Further, a single two-hour exposure to a cell phone, even at reduced power, was shown to damage or destroy up to two percent of an animal's brain cells.

In other experiments in Salford's laboratory, long term exposure of rats to a cell phone caused memory impairment, and a single six-hour exposure at extremely low power levels caused genetic damage. Exposure to a low-frequency magnetic field (low frequencies are also emitted by cell phones) caused disturbances of calcium transport in cells.

Articles by Leif Salford

BLOOD-BRAIN BARRIER PERMEABILITY IN RATS EXPOSED TO ELECTROMAGNETIC FIELDS USED IN WIRELESS COMMUNICATION, 1997
http://www.hese-project.org/hese-uk/en/papers/persson_bbb_wn97.pdf

NERVE CELL DAMAGE IN MAMMALIAN BRAIN AFTER EXPOSURE TO MICROWAVES FROM GSM MOBILE PHONES
Leif G. Salford, Arne E. Brun, Jacob L. Eberhardt, Lars Malmgren, and Bertil R. R. Persson, 2003
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241519/pdf/ehp0111-000881.pdf

NON-THERMAL EFFECTS OF EMF UPON THE MAMMALIAN BRAIN: THE LUND EXPERIENCE
Leif G. Salford, Henrietta Nittby, Arne Brun, Gustav Grafström, Lars Malmgren, Jacob Eberhardt, and Bertil R. R. Persson, 2007
www.icems.eu/docs/Salford.pdf

THE MAMMALIAN BRAIN IN THE ELECTROMAGNETIC FIELDS DESIGNED BY MAN—With special reference to blood-brain barrier function, neuronal damage and possible physical mechanisms, 2008
http://www.hese-project.org/hese-uk/en/papers/salford_mammalian_brain_2008.pdf

COGNITIVE IMPAIRMENT IN RATS AFTER LONG-TERM EXPOSURE TO GSM-900 MOBILE PHONE RADIATION, 2008
http://www.dontcellout.com/uploads/4/0/1/1/4011544/cognitive_impairments_in_rats.pdf

RADIOFREQUENCY AND EXTREMELY LOW-FREQUENCY ELECTROMAGNETIC FIELD EFFECTS ON THE BLOOD-BRAIN BARRIER, 2008
http://weepinitiative.org/LINKEDDOCS/health/nittby.PDF

INCREASED BLOOD-BRAIN BARRIER PERMEABILITY IN MAMMALIAN BRAIN 7 DAYS AFTER EXPOSURE TO THE RADIATION FROM A GSM-900 MOBILE PHONE, 2009
http://ccst.us/projects/smart/documents/082009_Nittby_Increased_Permeability.pdf

COMPARISON BETWEEN TWO MODELS FOR INTERACTIONS BETWEEN ELECTRIC AND MAGNETIC FIELDS AND PROTEINS IN CELL MEMBRANES, 2009
http://people.eng.unimelb.edu.au/malkah/Publications/2009_Bio_Sweden_Work.pdf

Source: http://www.cellphonetaskforce.org/?page_id=579

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 20

Description:
Article on smart meter switching-mode power supply and dirty electricity. (SMPS)

This exhibit will show:
Smart meters also place high frequency voltage transients on house wiring endangering occupants. These voltage transients were also linked to cancer.

This is important because:
In addition to microwave radiation directly from smart meters, meters also place spikes of current on house wiring, which radiates into the house.

Smart Meter Switching-Mode Power Supply and Dirty Electricity

High-frequency voltage transients, or "dirty electricity."

In addition to its RF transmitter, each wireless digital smart meter also has a component called the **'switching-mode power supply' (SMPS)** – switching power supply for short. Its function is to 'step down' the 240v alternating current (AC) coming in from the utility pole power lines to the 2 to 10 volts of direct current (DC) required to run the meter's digital electronics which record the electricity usage data.

The SMPS function emits sharp spikes of millisecond bursts constantly, 24/7. The smart meters emit spikes of up to 50,000 hz and higher. This constant pulsing of high frequencies, in addition to the RF function, can cause interference with other electric and electronic equipment in homes with smart meters, and also causing disturb biological systems in its field of exposure.

After converting AC to DC, the switching-mode power supply converts it back to AC with something called a "chopper circuit," that rapidly switches the voltage on and off to convert the DC signal back into AC, but with a way higher frequency than before. Typical switching frequencies here are in the 10-100 KHz (1 KHz = 1000 Hz

Dirty Electricity

When current flows through the wiring of a building it generates a surrounding electro-magnetic field that radiates outward all around the wires at right angles to the direction of the current's flow and reaches out into the room. It is well known that **switching power supplies can generate spikes of so-called electromagnetic interference (EMI), or high frequency transients, which then travel along the wiring in the walls, radiating outward in the wiring's electromagnetic field.**

Such spikes are known as 'dirty electricity' and can be conducted to a human body that is within the range of the radiating field. This function is on all smart meters used by all utilities and is on constantly, 24/7.

Transient voltage spikes from SMPS's in smart meters are on the order of 50-70,000 Volts/second. This waveform is much faster than the spikes caused by

SMPSs in appliances we have had in our houses for decades (computers, printers, etc.

Am J Ind Med. 2008 Aug;51(8):579-86. doi: 10.1002/ajim.20598.

A new electromagnetic exposure metric: high frequency voltage transients associated with increased cancer incidence in teachers in a California school.

Milham S[1], Morgan LL.

Abstract

BACKGROUND:

In 2003 the teachers at La Quinta, California middle school complained that they had more cancers than would be expected. A consultant for the school district denied that there was a problem.

OBJECTIVES:

To investigate the cancer incidence in the teachers, and its cause.

METHOD:

We conducted a retrospective study of cancer incidence in the teachers' cohort in relationship to the school's electrical environment.

RESULTS:

Sixteen school teachers in a cohort of 137 teachers hired in 1988 through 2005 were diagnosed with 18 cancers. The observed to expected (O/E) risk ratio for all cancers was 2.78 (P = 0.000098), while the O/E risk ratio for malignant melanoma was 9.8 (P = 0.0008). Thyroid cancer had a risk ratio of 13.3 (P = 0.0098), and uterine cancer had a risk ratio of 9.2 (P = 0.019). Sixty Hertz magnetic fields showed no association with cancer incidence. A new exposure metric, high frequency voltage transients, did show a positive correlation to cancer incidence. A cohort cancer incidence analysis of the teacher population showed a positive trend

(P = 7.1 x 10(-10)) of increasing cancer risk with increasing cumulative exposure to high frequency voltage transients on the classroom's electrical wiring measured with a Graham/Stetzer (G/S) meter. The attributable risk of cancer associated with this exposure was 64%. A single year of employment at this school increased a teacher's cancer risk by 21%.

CONCLUSION:

The cancer incidence in the teachers at this school is unusually high and is strongly associated with high frequency voltage transients, which may be a universal carcinogen, similar to ionizing radiation.

Comment in

- RE: A new electromagnetic exposure metric: high frequency voltage transients associated with increased cancer incidence in teachers in a California school, May 28, 2008; 51:579-586. [Am J Ind Med. 2009]

https://www.ncbi.nlm.nih.gov/pubmed/18512243

Electromagn Biol Med. 2013 Dec;32(4):500-7. doi: 10.3109/15368378.2012.743909. Epub 2013 Jan 16.

Dirty electricity, chronic stress, neurotransmitters and disease.

Milham S[1], Stetzer D.

Author information

Erratum in

- Electromagn Biol Med. 2014 Jan;33(1):79.

Abstract

Dirty electricity, also called electrical pollution, is high-frequency voltage transients riding along the 50 or 60 Hz electricity provided by the electric utilities. It is generated by arcing, by sparking and by any device that interrupts current

flow, especially switching power supplies. It has been associated with cancer, diabetes and attention deficit hyperactivity disorder in humans. Epidemiological evidence also links dirty electricity to most of the diseases of civilization including cancer, cardiovascular disease, diabetes and suicide, beginning at the turn of the twentieth century. The dirty electricity level in a public library was reduced from over 10 000 Graham/Stetzer (G/S) units to below 50 G/S units by installing plug-in capacitive filters. Before cleanup, the urinary dopamine level of only one of seven volunteers was within normal levels, while four of seven phenylethylamine levels were normal. After an initial decline, over the next 18 weeks the dopamine levels gradually increased to an average of over 215 μg/g creatinine, which is well above 170 μg/g creatinine, the high normal level for the lab. Average phenylethylamine levels also rose gradually to slightly above 70 μg/g creatinine, the high normal level for the lab. Neurotransmitters may be biomarkers for dirty electricity and other electromagnetic field exposures. We believe that dirty electricity is a chronic stressor of electrified populations and is responsible for many of their disease patterns.

PMID:

23323864

DOI:

10.3109/15368378.2012.743909

[Indexed for MEDLINE]

https://www.ncbi.nlm.nih.gov/pubmed/23323864

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 21

Description:
Fire hazards from smart meters.

This exhibit will show:
Smart meters are a fire hazard because they have no surge arrestors and can produce electrical arching during power surges. These is no fuse or circuit breaker for protection. Fires have been reported from smart meters around the country. NO smart meter is UL approved.

This is important because:
Smart meters are a danger to health because they can produce house fires.

Smart Meter Fire Hazard

There are no surge arrestors in smart meters like those found in analog meters. Thus, electrical arcing can occur during power surges, which is a fire hazard. Smart Meters are not UL approved (UL/CSA 61010-1)

Smart meters are a fire hazard because they can produce electric arcing during a power surge. The main power conductors for the house run through the small space in the meter and there is no fuse or circuit breaker to provide any protection in the event a short occurs inside the new meter. Fires have been reported starting from such meters. Underwriters Laboratories (UL) certificate of compliance and safety icon is NOT provided with each meter.

http://emfsafetynetwork.org/wp-content/uploads/2011/06/Smart-Meters-Risk-for-fire.pdf

https://www.thenewamerican.com/tech/energy/item/18904-in-u-s-and-canada-smart-meter-fires-spark-alarm

https://takebackyourpower.net/saskpower-ceo-resigns-following-investigation-into-smart-meter-catastrophe/

Smart meters are made with plastic parts, which can melt and catch fire.

Smart Meters are not installed by Registered Electricians

Utilities pull 105,000 meters in Canada, 70,000 in Oregon

Smart Meter Fires And Recalls

https://www.greentechmedia.com/articles/read/more-fires-more-smart-meter-recalls-for-sensus#gs.ANctF0E

Portland General Electric announced it was replacing 70,000 residential "smart" meters **that run the risk of catching fire,** many of them installed at rental properties in East Multnomah County. 2014

http://www.oregonlive.com/business/index.ssf/2014/07/pge_replacing_some_electricity.html

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SaskPower to remove 105,000 smart meters following fires (2014)

The Saskatchewan government decided to remove 105,000 Sensus smart meters deployed by utility SaskPower, after finding eight reports of overheating, some resulting in fires on the outside of the home.

http://www.cbc.ca/news/canada/saskatchewan/saskpower-to-remove-105-000-smart-meters-following-fires-1.2723046

Pennsylvania-based utility PECO halted installation of Sensus meters after reports of about two dozen fires. (2012)

https://www.greentechmedia.com/articles/read/peco-resumes-deployment-without-sensus-meters#gs.o7Gybl0

Lakeland Florida Electric officials replaced 178 smart Meters because of overheating. Four of the meters actually caught fire and melted. (2014)

http://www.theledger.com/news/20140116/lakeland-electrics-smart-meters-can-overheat

Any claim that the FCC has pronounced smart meter safe is spurious because the ***FCC has made that statement only with regard to the heating and cooking effects of electromagnetic energy.*** I have made no complaint that smart meters are like ovens.

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 22

Description:
Smart meter opt-out status in some states and municipalities.

This exhibit will show:
Various states have already instituted voluntary opt-out laws for people who do not want smart meters.

This is important because:
There is precedent for voluntary opting out of smart meters.

Smart Meter Opt out status in some states and municipalities:

Eugene, Oregon, offers an *opt in* to smart meters.

Eugene Water & Electric Board commissioners voted unanimously Tuesday night to approve a **voluntary** "smart" meter program. The voluntary option doesn't appease many of those who are against the meters, who say that the radio frequency emitted from neighboring meters would still put customers at risk of negative health effects.

http://projects.registerguard.com/rg/news/local/30540231-75/smart-meters-customers-eweb-meter.html.csp

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Arizona: (2015) The Arizona Corporation Commission (ACC) rescinded the decision they made last December to allow APS to charge an extortion fee to people who refuse a "smart" meter. Meanwhile, people may continue to refuse "smart" meters at no cost.

https://takebackyourpower.net/smart-meter-opt-out-fees-rescinded-in-arizona/

California : San Francisco - February 1, 2012 - The California Public Utilities Commission (CPUC) today modified Pacific Gas and Electric Company's (PG&E) Smart Meter program to include an analog meter option for residential customers who do not wish to have a wireless Smart Meter installed at their location.

Customers electing to retain or return to an analog meter will be assessed an initial fee of $75 and a monthly charge of $10. Customers enrolled in the CPUC's low income program (California Alternate Rates for Energy (CARE)) electing to opt-out will be assessed an initial fee of $10 and a monthly charge of $5.

http://docs.cpuc.ca.gov/PUBLISHED/NEWS_RELEASE/158621.htm

Vermont: In May 18, 2012, Governor Shumlin signed a law allowing for smart meter installation if utility company (1) provides prior written notice to the

customer indicating that the meter will use radio or other wireless means for two-way communication between the meter and the company and informing the customer of his or her rights; (2) **allows a customer to choose not to have a wireless smart meter installed, at no additional monthly or other charge**; and (3) **allows a customer to require removal of a previously installed wireless smart meter for any reason and at an agreed-upon time, without incurring any charge for such removal.**

http://publicservice.vermont.gov/electric/smart_grid

Maine : Central Maine Power has a smart meter Opt out option.

https://www.cmpco.com/smartmeter/smartmeteroptions.html

Texas: Texas has opt-out legislation and now a bill had been introduced to make Opt-out free of charge:

Texas (March 15, 2017) – A bill introduced in the Texas House would allow utility customers to opt out of installing "smart meter" technology on their homes and businesses. Passage of this bill would allow Texans to protect their own privacy, and it would take a step toward blocking a federal program in effect.

Rep. Ken King (R-Canadian) introduced House Bill 3656 (HB3656) on March 9. The legislation would allow Texas utility customers to opt out of any utility company smart meter program with no charge or penalty.

http://blog.tenthamendmentcenter.com/2017/03/texas-bill-would-allow-people-to-opt-out-of-smart-meters-undermine-federal-program/

Georgia: Customers who opt out of having a smart meter installed and prefer to maintain a mechanical meter at their residence can now do so with a basic service charge of $19 per month. Customers can request removal of their smart meters by calling 1-800-642-5172

https://www.georgiapower.com/residential/understanding-your-bill/smart-meter-faq.cshtml

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Florida has opt out option

https://www.fpl.com/rates/meter-options.html

Maryland : The Maryland Public Service Commission (PSC) provided for a permanent opt out for any residential or small commercial customer not wishing to have a smart meter in its Order Number 86200 dated February 26, 2014. This opt out was limited to customers of BGE, Delmarva Power & Light, Pepco and SMECO.

http://marylandsmartmeterawareness.org/opt-out-news/are-maryland-utilities-allowed-to-replace-our-analog-meters-with-non-smart-digital-meters/

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 23

Description:
A judge rules that opt-out fees levied on a disabled resident violate California law.

This exhibit will show:
A judge found it was illegal to levy an opt-out fee for a simple accommodation of a physician-confirmed disability.

This is important because:
Opting out of a smart meter due to a disability should not require a fee as that situation is covered under the Americans With Disabilities Act and various state laws.

RE: Opt Out Fees Posted on April 16, 2015 by Josh Hart

Judge Rules Electric Utility's Smart Meter Opt Out Fees Violate State Law; PSREC Refuses to Reconnect

Plumas-sierra rural electric cooperative acted illegally when it cut off electricity to Hart family

QUINCY, CA — A utility cooperative in rural Northern California has been ordered by Plumas County Superior Court Judge Janet Hilde to:

"...cancel the opt out fee and monthly fee for reading the analog meter, allowing Plaintiff (StopSmartMeters.org Director Josh Hart) to self-read the analog meter."

The decision last week comes 14 months after Plumas Sierra Rural Electric Cooperative (PSREC) cut the electric wires to the Hart household in February 2014 though the family have paid for their full electric usage minus the illegal "opt out" fees.

In the small claims court case brought by Mr. Hart in March, Judge Hilde found that **PSREC and its General Manager Bob Marshall violated state discrimination law**. The fees: $141 to start and $15/ month to use an analog meter, were found to be illegal under CA law **as the utility levied a fee for what they knew was a simple accommodation of a physician-confirmed functional impairment, or disability — the removal of RF emitting equipment from the premises.**

Judge Hilde's decision states:

"Plaintiff presented the court with a letter from his physician, stating that he has a condition, Electromagnetic Field Hypersensitivity, which causes him to suffer from headaches and other medical symptoms when exposed to radio frequency from smart meters. Plaintiff also provided the court with copy of the California Public Utility Code section 453(b) which provides in part: 'No public utility shall prejudice, disadvantage, or require different rates or deposit amounts from a person because of ancestry, medical condition, marital status, or change in marital status, occupation, or any characteristic listed or defined in section 11135 of the Government Code'"

Offer of Proof-Exhibit- Case # G-2017-2621285

Exhibit # 24

Description:
10 points of the Nuremberg Code.

This exhibit will show:
Under the Nuremberg Code one cannot experiment on people without their voluntary consent.

This is important because:
Placing 24/7 microwave emitting devices on every home in America has never been done before and constitutes an experiment in every sense of the word. It is done without consent and is a violation of Article 7 of the U.N. International Covenant on Civil and Political Rights.

Excerpted from:

Fifty Years Later: The Significance of the Nuremberg Code

Evelyne Shuster, Ph.D. - N Engl J Med 1997; 337:1436-1440November 13, 1997DOI: 10.1056/NEJM199711133372006

The Nuremberg Code

1. The voluntary consent of the human subject is absolutely essential.

This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment. The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.

5. No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.

7. Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.

8. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.

9. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

50 Years after Nuremberg

The Nuremberg Code has not been officially adopted in its entirety as law by any nation or as ethics by any major medical association. Nonetheless, its influence on global human-rights law and medical ethics has been profound.6

Its basic requirement of informed consent, for example, has been universally accepted and is articulated in international law in Article 7 of the United Nations International Covenant on Civil and Political Rights (1966). **6,22 Informed consent, with specific reliance on the Nuremberg Code, is also the basis of the International Ethical Guidelines for Biomedical Research Involving Human Subjects**, the most recent guidelines promulgated by the World Health Organization and the Council for International Organizations of Medical Sciences (1993).23

Source Information

From the Veterans Affairs Medical Center, University and Woodland Ave., Philadelphia, PA 19104, where reprint requests should be addressed to Dr. Shuster.

APPENDIX "B"

Note: Page numbers refer to Mark A. Israel's written testimony.

Exhibit numbers refer to my exhibits in the folder sent to Post Schell

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Alan V. Schmukler responds to testimony of:

Mark A. Israel who represents PPL Electric Corporation

Mark A. Israel states (P. 8) that Electromagnetic Hypersensitivity (EHS) should be called Idiopathic Environmental Intolerance because the medical condition is "controversial". He suggests the all the symptoms people with EHS report, are due to other causes.

My response:

In reality, electromagnetic sensitivity (EHS or ES) is a medical condition recognized by physicians and doctors around the world.

It has been recognized as an official disability in Sweden since 2002.

The Canadian Human Rights Commission recognized it in 2007.

The European Parliament recognized it as a disability in 2009.

The Brussels International Scientific Declaration on Electromagnetic Hypersensitivity recognized it in 2015. That paper (included in my latest presentation) was signed by prestigious physicians and scientists from around the world. (You'll find this document at the end of this paper and also online☺

http://www.ehs-mcs.org/fichiers/1441982143_Statement_EN_DEFINITIF.pdf

Dr. Gro Harlem Brundtland who is the retired General-Director of the World Health Organization, the former Prime Minister of Norway and a medical doctor with a master degree in public health, has stated in interviews that she is so sensitive to the radiation from computers, cordless phones and cell

phones, that she does not allow anyone to enter her office with a cell phone turned on. Below is a video subtitled in English where she also mentions this.

http://bit.ly/1hykTzF

Cyril W. Smith PhD is a physicist and a leading expert on the biological effects of electromagnetic fields on living systems. Not only does he acknowledge the reality of electromagnetic hypersensitivity (EHS), he has personally conducted extensive research on electromagnetic sensitivity, using human patients, not rats. He even developed a treatment for EM sensitivity.

He has in all probability seen and tested more electromagnetically hypersensitive patients than anyone else in the world. In cooperation with Professor W.J. Rea in Dallas, Texas, and Dr. Jean Monro in England he worked in developing a treatment for EM sensitivity

Cyril W. Smith has over 100 publications to his name in peer reviewed journals on biomedical electronics, dielectric liquids, and electromagnetic effects in biological systems. From 1973, in co-operation with the late Professor Herbert Fröhlich, he led studies on the interaction of coherent electromagnetic fields with living systems. He has written a book in cooperation with medical journalist Simon Best, entitled *Electromagnetic Man*. It was published by J.M. Dent in London (1989, 1990) and was awarded "Book of the Year – 1990" prize by Lamberts.

Here is just one of his papers on Electromagnetic Sensitivity

https://www.emfacts.com/2013/11/electrical-sensitivities-and-the-electrical-environment-2/

You will find a list of his 100 publications here:
http://www.scienceoflife.nl/html/cyril_smith.html

Also, when thousands of people in different countries report exactly the same symptoms coming only from exposure to EMF, that association cannot be ignored.

Electromagnetic sensitivity is also recognized in the Americans with Disabilities Act.

Note: When people were getting cancer from cigarettes, the tobacco companies used "expert" witnesses to suggest that the cancer was coming from any source but tobacco. The wireless industry is now adopting the same strategy to dismiss people being ill from RF radiation.

Mark A. Israel (P. 11) quotes a few random studies and states that "researchers have found no adverse effect on sleep related to greater use of wireless phones or higher levels of RF fields in the home".

My Response:

In my exhibits I present research that found that <u>insomnia was the most often reported symptom</u> in people exposed to electromagnetic fields. (My Exhibit 9). Electromagnetic fields cause sleep disturbance and cognitive dysfunction in sensitive people (Exhibit 7). Electromagnetic fields reduce melatonin in people (exhibit 5). Melatonin is the primary mediator of the sleep-wake cycle and without sufficient levels, a person can suffer insomnia.

Note: The studies I reference throughout my complaint were reported by researchers NOT associated with the wireless industry.

Note: Challenge tests for electromagnetic sensitivity are not reliable because most EM sensitive people can't detect the field, but rather experience symptoms associated with it. Symptoms can be delayed anywhere from half an hour to many hours. (see also especially the highlighted portion of the Brussels International Scientific Declaration on Electromagnetic Hypersensitivity and Multiple Chemical Sensitivity – 2015 below)

Mark A. Israel (P. 15) acknowledges that my discharge summary from National Institute of Health lists the diagnosis of Phase Lag Sleep Disorder and that it doesn't list RF fields, or EM sensitivity.

My Response:

This is true. The summary doesn't list RF fields, or EM sensitivity. I never asserted that it did. I was diagnosed with Phase Lag Sleep Disorder which is a disruption of the sleep/wake cycle. The sleep wake cycle is mediated by melatonin levels. Electromagnetic fields, including RF fields such as produced by smart meters, have been shown to lower melatonin levels (Exhibit #5.), which results in insomnia. <u>I.e. EM fields can exacerbate insomnia.</u>

Brussels International Scientific Declaration on Electromagnetic Hypersensitivity and Multiple Chemical Sensitivity - 2015

Following the 5th Paris Appeal Congress that took place on the 18th of May, 2015 at the Royal Academy of Medicine, Brussels, Belgium

Considering that the chemical and electromagnetic environment is deteriorating globally, and that so called electromagnetic hypersensitivity (EHS) and multiple chemical sensitivity (MCS) are an escalating worldwide health problem, affecting industrialized as well as developing countries.

We, physicians, acting in accordance with the Hippocratic Oath, we, scientists, acting in the name of scientific truth, we all, medical doctors and researchers working in different countries worldwide, hereby state in full independence of judgment, that a high and growing number of persons are suffering from EHS and MCS worldwide;

□ that EHS and MCS affect women, men and children;

□ that on the basis of the presently available peer-reviewed scientific evidence of adverse health effects of electromagnetic fields (EMFs) and various chemicals, and on the basis of clinical and biological investigations of patients, EHS is associated with exposure to EMFs and MCS with chemical exposure;

□ that many frequencies of the electromagnetic spectrum (radio- and microwave frequencies as well as low and extremely low frequencies) and multiple chemicals are involved in the occurrence of EHS and MCS respectively;

□ that the trigger for illness can be acute high intensity exposure or chronic very low intensity exposure and that reversibility can be obtained with a natural environment characterized by limited levels of anthropogenic EMFs and chemicals;

□ **that current case-control epidemiological studies and provocative studies aiming at reproducing EHS and/or MCS are scientifically difficult to construct and due to the present design flaws are in fact not suitable to prove or disprove causality; in particular because objective inclusion/exclusion criteria and endpoint evaluation criteria need to be more clearly defined; because responses to EMFs/chemicals are highly individual and depend on a variety of exposure parameters; and finally because test conditions are often reducing signal-to-noise ratio thereby obscuring evidence of a possible effect;**

□ that the nocebo effect is not a relevant nor a valid explanation when considering scientifically valuable blind provocation studies, since objective biological markers are detectable in patients as well as in animals;

□ that new approaches are emerging for clinical and biological diagnosis and for monitoring of EHS and MCS including the use of reliable biomarkers;

□ that EHS and MCS may be two faces of the same hypersensitivity-associated pathological condition and that this condition is causing serious consequences to health, professional and family life;

□ finally that EHS and MCS ought therefore to be fully recognized by international and national institutions with responsibility for human health.

In view of our present scientific knowledge, we thereby stress all national and international bodies and institutions, more particularly the World Health Organization (WHO), to recognize EHS and MCS as true medical conditions which acting as sentinel diseases may create a major public health concern in years to come worldwide i.e. in all the countries implementing unrestricted use of electromagnetic field-based wireless technologies and marketed chemical substances.

Signatories

□ Igor Belyaev, Ph.D, Dr.Sc, Laboratory of Radiobiology, Cancer Research Institute, Slovak Academy of Science – Slovak Republic □ Dominique Belpomme, MD, MS, Professor in Oncology, Paris University Hospital – France, European Cancer and Environment Research Institute (ECERI) - Brussels □ Ernesto Burgio, MD, Paediatrician, International Society of Doctors for the Environment (ISDE) scientific committee – Italy, European Cancer and Environment Research Institute (ECERI) - Brussels □ Christine Campagnac, MPH, Hospital Director, Association for Research and Treatment against Cancer (ARTAC) - France, ECERI– Brussels □ David O. Carpenter, MD, Institute for Health and the Environment, University of New York at Albany, USA □ Janos Frühling, MD, Professor in Nuclear Medicine, Honorary Permanent Secretary of the Royal Academy of medicine of Belgium - Brussels. □ Yuri Grigoriev, DMedSC, Russian National Committee on Non-Ionizing Radiation Protection - Russia □ Lennart Hardell, MD, Ph.D., Oncologist, University Hospital, Örebro, Sweden □ Magda Havas, Ph.D Associate Prof of Environmental & Resource Studies at Trent University – Canada □ Jean Huss Honorary member of the Luxembourg Parliament and the European Council Parliament, founder of the AKUT NGO – Luxembourg □ Philippe Irigaray Ph.D, Doctor of science in Biochemisty, Association for Research and Treatment against Cancer (ARTAC) - France, ECERI– Brussels □ Elizabeth Kelley, MA, Electromagnetic Safety Alliance, Inc. Arizona, USA □ Michael Kundi, Ph.D, Professor, Medical University of Vienna, Center for Public Health, Institute for Environmental Health, Austria □ Pierre Le Ruz, Ph.D, Criirem, France □ S.M.J. Mortazavi, Ph.D, Professor of Medical Physics, Shiraz University of Medical Sciences Chair, Ionizing and Non- ionizing Radiation Protection Research Center - Iran □ Joachim Mutter, M.D, Environmental Health Center – Germany □ Enrique A. Navarro, Ph.D, Professor, Department of Applied Physics & Electromagnetism, University of Valencia- Spain □ Peter Ohnsorge,M.D, European Academy for Environmental Medicine – Germany □ William J. Rea, M.D, F.A.C.S, F.A.A.E.M, Environmental Health Center, Dallas, Texas, USA □ Roberto Romizi, MD, International Society of Doctors for the Environment (ISDE) – Italy □ Cindy Sage, M.A, Co-Editor, Bioinitiative Reports – USA □ Cyril Smith, Ph.D., D.I.C. University of Salford – England □ Louise Vandelac, Ph.D, Professor, Institute of Environmental Sciences, Researcher, CINBIOSE, University of Quebec in Montreal- Canada □ André Vander Vorst, Ph.D, Professor Emeritus Microwave Laboratory - Belgium

Excerpted from

https://drive.google.com/file/d/0B14R6QNkmaXuMDliMFd1M2VSU0E/view

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A sample of legal awards, cases, laws and recognition of/for electromagnetic sensitivity (EHS):

http://www.electrosensitivity.co/legal.html

- **Australia**; Dr McDonald and Comcare, AATA 105 (February 28th 2013; scientist won 75% of salary when he was unable to work because his employer failed to protect him from radiation although he had been diagnosed with EHS)
- **Australia:**"Parent's success in stopping WiFI installation at Australian school" (EMFacts, November 5 2015, about a school which installed wired internet access to provide equal opportunity to a child disabled by electrosensitivity).
- **Canada:** "The Medical Perspective on Environmental Sensitivities" (Margaret Sears, Canadian Human Rights Commission, 2007, recognising MCS and ES)
- **Canada:** "Électrohypersensibilité à l'école : une mère devant les tribunaux" (André Fauteux, La Maison du 21 Siècle, September 10 2015, on a Montreal lawyer whose children suffer EHS symptoms from WiFi in school, who is suing la Direction de la santé publique (DSP) and the Quebec government for refusing to give her and her three children reasonable accommodations due to EHS; she filed her complaint with the Quebec Commission on Human Rights and Youth Rights on August 28 2015 and has also instituted proceedings in the Superior Court, on the grounds that "The DSP violates Canadian law on human rights".)
- **France:** ES recognised as a disability with financial assistance for shielding and measuring equipment awarded by the MDPH of Essone for a technician in a chemical laboratory who had been on sick leave since 2011 (2014)
- **France:** "French woman wins disability grant for 'gadget allergy'" (AFP, Expatica, August 26 2015: the applicant, Marine Richard, 39, a former radio documentary producer, hailed the ruling as a "breakthrough" for people afflicted by Electromagnetic Hypersensitivity (EHS). Richard lives in the mountains of southwest France, in a renovated barn without electricity, and

drinking water from the well. A court in Toulouse decided she can claim a disability allowance of about 800 euros ($912) per month for 3 years. Her lawyer Alice Terrasse said the ruling could set a legal precedent for "thousands of people". BBC News: "Gadget 'allergy': French woman wins disability grant" (August 27 2015)

- **France:** "Sobriété de l'éxposition aux champs électromagnétiques, information et concertation lors de l'implantation d'installations radioélectriques" (pdf; Number 2065, Assemblée Nationale, January 29 2015: a law banning WiFi in nurseries and restricting it in some other schools, and requiring a report on EHS within a year)
- **France:** French High Court bans wireless smart meter for EHS: The Judge of the Appeals of the High Court of First Instance of Grenoble, in a decision of September 20 2017, forbid ENEDIS SA to install a "Linky" wireless smart meter in the home of a couple owners who refused. Mr and Mrs F., domiciled in MEYLAN (Isère), had informed ENEDIS that they refused the installation of a wireless electric meter at their home, especially given the fact that their son was Electro-Hyper-Sensitive (EHS) and that the Linky meter would cause a disturbance to the health of their son. (Next-up News, September 23 2017)
- **South Africa:** "First Officially Recognized Case of the Functional Impairment EHS" (Lauraine Vivian & Olle Johansson, Comment, BMJ Open, 2013)
- **Spain:** Teacher awared 100% of salary (The Spanish Labour Court of Madrid recognised the permanent incapacity of a college professor who suffered from CFS and environmental EHS and awarded 100% of the base salary, 2011).
- **Spain:** FM, MCS and ES recognised as permanent disability in Spain: At Social Court, Number 4, in Castellón, for the first time in Spain, permanent disability has been recognized as a great disability in a patient afflicted with fibromyalgia (FM), multiple chemical sensitivity (MCS) and electrosensitivity (ES). Ruben had to sell his house and move home to a place in the mountains, only accompanied by Rosalina, his wife, who assists him and who can now also benefit from a help. ("Es el fin a cuatro años de calvario, enfermo y aislado en Betxí" El Periódico Mediterráneo, March 1 2017)
- **Spain:** Support plan for people with EHS (July 1 2016, Tarragona Municipality Government: for people with Central Sensitivity Syndromes (CSS) which includes ES and EHS, especially: "Housing protocol for people with CSS, especially those who have MCS and/or EHS, those threatened by eviction or those who are forced to leave their home. This protocol has to

include a series of safe social housing (green/white spaces: free of xenobiotics and electromagnetic waves). Create green/white spaces in all municipal buildings (free of xenobiotics and electromagnetic waves).)

- **Spain:**"A telecoms engineer with electrosensitivity is awarded disability benefits because of his inability to work in WiFi areas" (Ana Macpherson, Lavanguardia, August 2 2016, where the High Court in Madrid awarded disability benefit to Ricardo de Francesco, a 47-year-old telecoms engineer with Ericsson, who suffers tinnitus, headaches and sleeplessness from cellphones. This overturns refusal of the National Institution of Social Security (INSS) which in 2014 denied disability benefits on the grounds that there was then insufficient medical evidence.)
  Patricia Esteban: "Spain: High Court of Madrid Ruling Recognizes "Electrosensitivity" as Grounds for Total Permanent Disability" (noticias.juridicas.com, August 3 2016)
- **Sweden:** Specific recognition of EHS as a functional impairment (Olle Johansson)
- **Taiwan:** "Lawsuit Against Spread of Illegal Installation of Mobile Phone Base Stations" (2011: the plaintiff suffered a 3-year exposure, close to the EM radiation source, which might cause mental illness, and carcinogenic body diseases, especially for those who are new-born infants and the elderly staying home for nearly 24 hours a day, and causing the plaintiff's mental discomfort and therefore a compensation of $100 thousands NT per person was to be paid by defendants, according to the Paragraph 1 of Article 184 of the Civil Code, the provisions of Article 195)
- **Taiwan:**"Does YOUR toddler play on an iPad? Taiwan makes it ILLEGAL for parents to let children under two use electronic gadgets... and under-18s must limit use to 'reasonable' lengths" (Daily Mail, January 28 2015)
- **UK:** Employment and Support Allowance awarded (Documnent ref. no.: 171) (Under the Social Entitlement Chamber, ESA Regulation 29, Exceptional Circumstances, 2b: "the claimant suffers from some specific disease or bodily or mental disablement"; the Judge stated: "Were it not for the EMR the appellant would lead a normal life with little or no functional impairment ... Considerations included the fact that the appellant would be unable to work in any 'normal' working environment indoors or outdoors - anywhere there was WiFi, mobile phones or mobile phone masts ... Taken together the prospects of the appellant being able to 'work' ... were effectively nil." 2012)
- **US American Disability Access Board:** MCS and EHS (General Issues: "The Board recognizes that multiple chemical sensitivities and electromagnetic sensitivities may be considered disabilities under the ADA

if they so severely impair the neurological, respiratory or other functions of an individual that it substantially limits one or more of the individual's major life activities. The Board plans to closely examine the needs of this population, and undertake activities that address accessibility issues for these individuals. The Board plans to develop technical assistance materials on best practices for accommodating individuals with multiple chemical sensitivities and electromagnetic sensitivities.")

- **US American Disability Access Board:**Report (Background: Final Rule Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Recreation Facilities, 2000, page 11: Electromagnetic Fields: "For people who are electromagnetically sensitive, the presence of cell phones and towers, portable telephones, computers, fluorescent lighting, unshielded transformers and wiring, battery re-chargers, wireless devices, security and scanning equipment, microwave ovens, electric ranges and numerous other electrical appliances can make a building inaccessible. The National Institute for Occupational Safety and Health (NIOSH) notes that scientific studies have raised questions about the possible health effects of EMF's. NIOSH recommends the following measures for those wanting to reduce EMF exposure – informing workers and employers about possible hazards of magnetic fields, increasing workers' distance from EMF sources, using low-EMF designs wherever possible (e.g., for layout of office power supplies), and reducing EMF exposure times.")
- **USA:** Antoinette Yannon wins claim for late husband Samuel Yannon (1982, following illness and later death because of exposure to microwave transmitters)
- **USA:** "Causal. Legally Recognized Proof of the Damage Potential of Technical Highfrequency Fields - a Case Report" (Eger H,Umwelt-medizin-gesellschaft, 2014, 27(3): 176-181: When a US-American patient moved to Bavaria in 2006 and he was sensitised by nocturnal High Frequency radiation, he had to move away in 2007, but although he improved he was unable to work subsequently because of the ever higher environmental exposures. The court ackowledged his ES in 2012 and he was granted apension back-dated to 2008.)
- **USA:**"Court rules for Berkeley in cellphone right to know case" (Berkeleyside, September 22 2015: Federal district judge Edward Chen ruled in favor of the City of Berkeley's cellphone 'right to know' ordinance against a First Amendment rights challenge by the CTIA; Preliminary Judgement)

- **USA:** Indoor Environmental Quality (National Institute of Building Sciences, with Access Board, 2005, p.47f)
- **USA:** "Health Hazard Evaluation Report: Nonionizing Radiation Exposure to Technicians at a Satellite Communications Facility" (HETA 2007-0085-3062, National Institute for Occupational Health & Safety (NIOSH), 2008, p.10)
- **USA:** "Hypersensitivity to WiFi … could it be a disability?" (Alexis Kramer, Bloomberg BNA Legal, September 10 2015)
- **USA:** "Judge rules electric co-op violated discrimination laws" (Plumas County News, May 4th 2015, where a utility was required to restore an analog meter for an EHS customer and not to discriminate against the EHS customer in setting higher charges for installation or reading the meter)
- **USA:** LAUSD accommodates ES teacher (Los Angeles Unified School Board provides WiFi-free environment without radiation for Mrs Anura Lawson, a teacher made electrically sensitive by the school WiFi installation earlier in the year, 2014)

  Susan Foster: "Americans with Disabilities Act Title II Evaluation of Electromagnetic Sensitivities (EHS) & Accommodations" (letter to Superintendent Michelle King, Los Angeles Unified School District, July 5 2017)
- **USA:** "Legal Implications of the Soviet Microwave Bombardment of the U.S. Embassy" (Larry B. Guthrie, Boston College International and Comparative Law Review, 1:1, 1977)
- **USA:** "Massachusetts: Wi-Fi in School : ADA Federal Complaint Against School After Child Fell Sick From Wireless Installation" (Towards Better Health, August 14 2015); Complaint (August 12 2015); Scott O'Connell: "Family sues Fay School in Southboro, claims Wi-Fi made son ill" (Worcester Telegram & Gazette, August 24 2015) WCVB: "Preliminary agreement reached in Southborough Wi-Fi lawsuit" (August 27 2015); Scott O'Connell: "Wi-Fi lawsuit against Southboro's Fay School is headed to trial" (Telegram, January 18 2016); Q&A interview with mother; Beth: "Fay accused of retaliating against family suing school" (My Southborough, March 11 2016).
- **USA:** California state legislature recognizes people with electromagnetic sensitivities as disabled:
  "Since May 2017, the California Legislature has provided ADA accommodation for people disabled by electromagnetic sensitivities (EMS). This is the first California legislative session to acknowledge EMS and to arrange accommodation and access for the EMF-disabled so that they can

participate at hearings.
On Wednesday, July 12 2017, California Assembly leaders provided the most extensive accommodation to date at a hearing on Senate Bill 649 (Hueso). Assembly Communications and Conveyance Committee Chairman Miguel Santiago said, "The Assembly's Americans with Disabilities Act coordinator has received multiple requests for accommodation from individuals wishing to participate in this hearing," and "in an attempt to accommodate as many individuals as possible," the committee a) made a special order of business with a "time certain" for the SB 649 hearing, so those with EMS could arrive for the hearing and then leave, reducing their EMF exposure b) provided remote telephone access for those too disabled by the indoor air quality to testify in person, and c) made a request to the audience to turn off the wireless on their cell phones or put them in airplane mode "as a courtesy to the electromagnetically sensitive."
(Smart Meter Harm, September 15, 2017)

Evidence for, and recognition of, ES and EHS as a 'functional impairment' and 'disability'

- Lindsey D'Agnolo: "Are "Wi-Fi Allergies" an Impairment Covered by the ADA?" (The National Law Review, June 21 2017)
- Olle Johansson: "Electrohypersensitivity: state-of-the-art of a functional impairment" (2006, Electromagn Biol Med., 25(4):245-58.)
- Seletun International Panel: The Seletun Scientific Statement (Key point 10: Functional Impairment Designation for Persons with Electrohypersensitivity: "The Panel strongly recommends that persons with electrohypersensitivity symptoms (EHS) be classified as functionally impaired rather than with 'idiopathic environmental disease' or similar indistinct categories." 2010)
- Yael Stein: "Environmental Refugees: Electrohypersensitive individuals (EHS) in the digital world – a disabled population, deprived of home, work and basic rights" (UNESCO Conference, 2015)

Governmental and advisory groups on ES equality rights

- **Council of Europe:** Resolution 1815 (Parliamentary Assembly, 2011) Point 8.1.4:
"Pay particular attention to 'electrosensitive' people who suffer from a

syndrome of intolerance to electromagnetic fields and introduce special measures to protect them, including the creation of wave-free areas not covered by the wireless network."

European Union: Parliamentary Resolution (2008/2211(INI)) (2009)
Point 28:
"Calls on Member States to follow the example of Sweden and to recognise persons that suffer from electrohypersensitivity as being disabled so as to grant them adequate protections as well as equal opportunities

Note: Page numbers refer to Christopher C. Davis's written testimony.

Exhibit numbers refer to my exhibits in the folder sent to the court.

Alan V. Schmukler responds to written testimony of:

Christopher C. Davis who represents PPL Electric Utilities Corporation.

Christopher Davis stated: (p7 of his presentation) "The total daily RF signaling from the AMI meters used by PPL Electric is 84 seconds over the course of 24 hours. "

My response:
Christopher Davis conveniently failed to mention that those 84 seconds are broken up into many thousands of millisecond bursts, so that the meter is sending out tens of thousands of RF pulses throughout the day and night. The meter sends out a pulse every 7-12 seconds and sometimes more often than that, around the clock. The smart meters transmit pulses of wireless radiation up to 100,000 times a day or more. A small fraction of that is the meter communicating with the utility. The rest is the meter communicating with other meters in the area in a constant "chatter" called "Mesh Network Message Management". That's what accounts for the thousands of pulses day and night. Anyone with a smart meter is being bombarded by this all day and night.

Dr. David O. Carpenter (my exhibit # 10, p. 2) states:

"Most electronic meters transmit signals to the utility for relatively short periods of time, but generate radio frequency pulses at frequent intervals day and night. Thus the device continuously generates RF radiation that will expose anyone nearby 24/7."

BIO

David O. Carpenter is a public health physician who serves as director of the Institute for Health and the Environment, a Collaborating Center of the World Health Organization, as well as a professor of environmental health sciences at U Albany's School of Public Health. He previously served as Director of the Wadsworth Center of the New York State Department of Health, and as Dean of the University at Albany School of Public Health. Carpenter, who received his medical degree from Harvard Medical School, has more than 435 peer-reviewed publications, 6 books and 50 reviews and book chapters to his credit.

I submit this group of articles (link below) from the smart meter education network (a consumer group). It was written in non- technical language and has clear illustrations as well. While it is not full of citations, it is well researched and I challenge the defendant (PPL Electric Utilities Corp) to dispute the essence of it. I believe it will help clarify some of the technical issues.

http://smartmetereducationnetwork.com/smart-meters-what-they-are-and-what-they-do.php#2a1

Christopher Davis stated (p. 8 of his presentation) that the FCC determined safe Maximum Permissible Exposure limits for smart meters.

My response:

The FCC is working on the old premise that electromagnetic fields (non-ionizing radiation) have no harmful effects. That has been disproven by scientists and doctors around the world. (I refer you to the Bioinitiative Reports 2007 and 2012 that was based on 1800 studies done by scientists independent of governments, and the wireless industry, along with other research reports and articles I submitted).

ALSO,

Harvard University ethicists have described the FCC as a "*captured agency dominated by the industries it presumably regulates.*" That article is available at this link:

https://ethics.harvard.edu/files/center-for-ethics/files/capturedagency_alster.pdf

The idea that non- ionizing radiation is harmful is well established:

In 2017, 180 scientists and doctors from 36 countries recommended a moratorium on the fifth generation (5G) program for telecommunication until potential hazards to human health have been fully investigated by scientists independent of the wireless industry. They warn of the dangers of electromagnetic fields (ie, non- ionizing radiation). (More scientists signed on):

"**More than 230 scientists from 41 countries** have expressed their "serious concerns" regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices already before the additional 5G rollout."

(At this link you will find the full paper. All the signatories are listed at the bottom of the paper)

https://ehtrust.org/wp-content/uploads/Scientist-5G-appeal-2017.pdf

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Christopher Davis states (p.10 of his paper) that my measurement of 0.18 watts /meter squared was taken right next to my neighbor's meter.

My response:

My reading was taken at a point in my house furthest from the meter. Davis also states that 0.18 watts /meter squared is 33 times lower than the FCC standard. The FCC used outdated assumptions and industry friendly data in coming up with their standard.

The Bioinitiative Report 2007 & 2012 (my exhibit 16) was based on 1800 studies done by scientists independent of governments, and the wireless industry. In 2007 they recommended a safe exposure of: 0.1 uW/cm2 (or one-tenth of a microwatt per square centimeter). That is 0.1 MICRO watts

/meter squared, much lower than the 0.18 WATTS/meter squared that I found from the smart meter.

Christopher Davis asserts (p. 11 of his report) that exposure from PPL's smart meter is of "very short duration – a total of 84 seconds over 24 hours and is not a constant exposure. "

My response:

This is disingenuous at best. Once again Davis omits the fact that the 84 seconds are broken up into thousands of milliseconds so that the smart meter radiates every few seconds around the clock, which produces essentially, constant exposure. The smart meter is constantly communication with other meters in the area.

Christopher Davis asserts (p. 11 of his report) that the AMI meter used by PPL does not generate electrical power and does not produce harmonics above what is coming into the meter nor interfere with house wiring.

My Response:

PPL's smart meter uses something called a "switching mode power supply"(SMPS) which first reduces the voltage coming into the meter, then boosts it back up before lowering it again. This creates very high frequencies (Giga hertz) on the house wiring, which induces electromagnetic fields that extend into the house and expose the occupant to these fields.

Here is a quote from expert William S. Bathgate and below are his illustration of the high frequency transients and his credentials:

file:///C:/Users/Alanh/Downloads/BathgateAMI.pdf

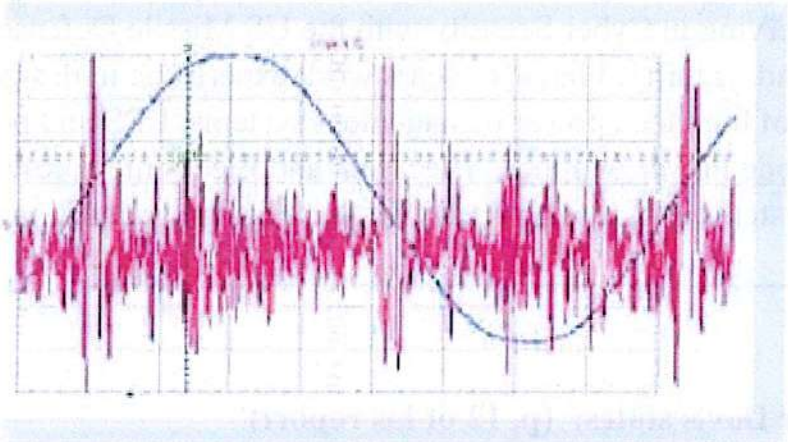
William S. Bathgate

The AMI Meter

The meter and various versions of the electronic meters all currently exhibit spiked high frequency voltage transients and magnetic common mode currents backwards onto the home wiring system, creating a huge antenna amplifying these transients and magnetic currents.

SMPS with Common Mode Filter – Principles You Need to Understand

The Standard Single Phase 60 Cycle/Second Waveform with EMI/RFI introduced by the SMPS



This waveform displayed is the same as an oscilloscope trace would look like, you cannot see this on a common voltmeter. Now we have introduced the effects of EMI/RFI via the SMPS to the same wire carrying the house current. This effect can be less depending on the environment, especially how good the house earth ground is magnetically coupling the house voltage currents. There are many variables that affect this waveform. The image in red should never be there, I have found this pattern consistent with every AMI meter, including the AMI meter with the radios off and the various digital meter alternatives. It is not compliant to FCC rules for "conducted" Emissions Class A or Class B.

7/16/2017 20

This waveform displayed is the same as an oscilloscope trace would look like, you cannot see this on a common voltmeter. Now we have introduced the effects of EMI/RFI via the SMPS (switching mode power supply) to the same wire carrying the house current. The image in red should never be there. I have found this pattern consistent with every AMI meter, including the AMI meter with the radios off and the various digital meter alternatives. It is not compliant to FCC rules for "conducted" Emissions Class A or Class B.

BIO

William S. Bathgate holds an electrical engineering and mechanical engineering degree from Univ. of Illinois and Iowa State University. He was employed through late 2015 for 8 years at the Emerson Electric Company. While at Emerson Electric I was the Senior Program Manager for Power Distribution Systems and in charge of RF and IP based digitally controlled high power AC power switching system product lines in use in over 100 countries. I was also directly responsible for product certifications such as UL, CE, PSE and many other countries electrical certification bodies. I am very familiar with the electrical and electronic design of the AMI meters in use because I was responsible for very similar products with over 1 Million units installed across the world. I hold a DOD Top Secret Clearance, serving in Cyber Security with the US Missile Defense Agency, NASA and Homeland Security. I have 40 years work experience in design and deployment of high tech power management systems, UPS and power distribution Switched Mode Power Supplies, Electrical and Electronic hardware engineering Computer systems engineering Radio Systems design and testing.

Christopher Davis states: (p. 12 of his report)

1. RF fields don't produce thermal effects.

My response:

I agree. My assertion (and that of hundreds of scientists) is that RF fields produce harm by other means than heating tissue. (The current theory is that they produce harm by affecting "voltage-gated calcium channels" in the cells.)

Chrisopher Davis states (p.12) that there is nothing unusual about RF fields from smart meters and they are the same as everyday devices.

My response:

I disagree: One big difference is that the other devices are used VOLUNTARILY and one can opt not to use them, or use them at a safe distance or infrequently. The AMI smart meter is on 24/7 and can't be shut off by the resident.

Another difference is that the waveform produced by a smart meter has an irregular sawtooth pattern and is not like the sign wave one finds in normal household appliances. (see illustration above from William S. Bathgate)

Also, the emissions from the meter vary in intensity throughout the day. The sawtooth pattern and constant random varying of the emissions are an irregular and constantly changing stimulus which is something a normal body cannot easily adapt to.

Christopher Davis states (p. 12) that RF fields from other sources are higher than those produced by smart meters, giving cell phones as an example.

My response:

No one leaves a cell phone on next to their head all day and night. Also, he's comparing cell phone radiation to a single burst from the smart meter, but the smart meter makes tens of thousands of such bursts each 24 hours.

Christopher Davis states: (p. 12 of his report) that: "There is no reliable basis in physics, biophysics,. Bioelectromagnetics or RF Bioelectromagnetics to conclude that the very low levels of RF Fields from the AMI meters used by PPL can or will cause an adverse thermal or non- thermal biological effects in people."

My response: His conclusion is disputed by 230 scientists in 41 countries who have signed a letter warning of the danger of low level microwave non-ionizing radiation (my exhibit 13) . It also contradicts the conclusions of the authors of the Bioinitiative Report 2012 (and updates to 2017) that were based on 1800 studies <u>done by scientists independent of governments, and the wireless industry</u>, who found harmful effect from non-ionizing radiation. (Exhibit 16)

www.bioinitiative.org http://bioinitiative.info/bioInitiativeReport2012.pdf

http://www.bioinitiative.org/research-summaries/

In an update for 2012 the Bioinitiative scientists found these biological effects and others from non-ionizing electromagnetic radiation:

BIOINITIATIVE 2012 – CONCLUSIONS Table 1-1

Overall, these 1800 or so new studies report abnormal gene transcription (Section 5); genotoxicity and single-and double-strand DNA damage (Section 6); stress proteins because of the fractal RF-antenna like nature of DNA (Section 7); chromatin condensation and loss of DNA repair capacity in human stem cells (Sections 6 and 15); reduction in free-radical scavengers – particularly melatonin (Sections 5, 9, 13, 14, 15, 16 and 17); neurotoxicity in humans and animals (Section 9), carcinogenicity in humans (Sections 11, 12, 13, 14, 15, 16 and 17); serious impacts on human and animal sperm morphology and function (Section 18); effects on offspring behavior (Section 18, 19 and 20); and effects on brain and cranial bone development in the offspring of animals that are exposed to cell phone radiation during pregnancy (Sections 5 and 18). This is only a snapshot of the evidence presented in the BioInitiative 2012 updated report.

http://www.bioinitiative.org/conclusions/

My exhibit #18

I also reference my Exhibit 18, which lists top experimental and epidemiological studies on wireless radiation. There you will find 13 pages of studies linking wireless (non-ionizing) radiation to specific cancers, neurological diseases, cognition problems and more.

The most recent studies on RF radiation were:

—The National Toxicology Program (NTP) 10 year, 25 million dollar study which found specific cancers (Glioma and Schwannoma) in rats exposed to cell phone radiation. None of the rats that weren't exposed developed those cancers.

—The Ramazzini Study which followed on the heels of the NTP study and reported similar results. The malignant schwannomas of the heart seen in the Italian study are the same as those described by the U.S. National Toxicology Program.

Here is an article about this latest Italian study:

More Than a Coincidence

Louis Slesin

New Large Animal Study, Like NTP's, Links RF to Schwannoma of the Heart

February 20, 2018

It's happened again. A second large study has found tumors in the Schwann cells —schwannomas— in the hearts of male rats exposed to cell phone radiation. The new finding comes from the Ramazzini Institute in Bologna, Italy.

The malignant schwannomas of the heart seen in the Italian study are the same as those described by the U.S. National Toxicology Program (NTP) earlier this month as the basis for their concern that cell phone radiation, both GSM and CDMA, can lead to cancer. Ramazzini embarked on its RF project in 2005, about the same time as the NTP effort was taking off.

A paper detailing the Ramazzini experiment is expected to be published in *Environmental Research,* a peer-reviewed journal, within a week. [Update: Now due March 7 or later.]

"It is a positive study and will buttress the findings from the NTP rat study," Tony Miller told *Microwave News.* Miller, an emeritus professor of epidemiology at the University of Toronto, is serving as the guest editor for a special issue of the journal, which will include the Ramazzini paper. Miller declined to offer any other details prior to publication.

Fiorella Belpoggi, the Ramazzini Institute's director of research, presented preliminary results of the study last fall. Speaking at the annual symposium of the Collegium Ramazzini, known as "Ramazzini Days," in late October, Belpoggi reported finding schwannomas in the heart of male rats exposed to GSM cell phone radiation, according to a number of those who were at the meeting. (The abstract of Belpoggi's paper is available here.)

This is "more than a coincidence," was a typical response from close observers of cell phone toxicology studies who had heard or were told of the new results. No one wanted to speak for attribution until they had a chance to read the new Ramazzini paper. "It's amazing given that malignant schwannoma of the heart is a super rare cancer," said one of those interviewed.

In an e-mail exchange, Belpoggi confirmed that her paper would be available online within days. She would not comment further.

A total of 2,448 rats were exposed to 1.8 GHz GSM radiation for their entire lifetime in the Ramazzini study. The radiation used in the Ramazzini study was designed to mimic that transmitted by a cell phone base station. The rats were exposed to 5, 25, or 50 V/m for 19 hours per day from before birth until spontaneous death. Equivalent SARs are not provided in the abstract. As the rats grew larger, the SARs will have decreased. (The NTP exposures were at 900 MHz and were limited to two years.)

Full article can be found at: http://microwavenews.com/news-center/more-coincidence

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Below is an article that quotes Dr. Anthony B. Miller, who declared cell phone and wireless radiation as carcinogenic to humans.

BIO

Dr. Anthony B. Miller is a physician epidemiologist who specializes in cancer etiology, prevention, and screening. Miller is Professor Emeritus at the Dalla Lana School of Public Health of the University of Toronto and Senior Medical Advisor to the Environmental Health Trust. He has been a longtime advisor to the World Health Organization (WHO) and was Senior Epidemiologist for the International

Agency for Research on Cancer (IARC). He served as Director of the Epidemiology Unit of the National Cancer Institute of Canada, Chair of the Department of Preventive Medicine and Biostatistics at the University of Toronto, Head of the Division of Cancer Epidemiology at the German Cancer Research Centre, and Consultant to the Division of Cancer Prevention of the U.S. National Cancer Institute. He has performed research about electromagnetic fields and cancer and has served on many committees assessing carcinogenicity of various exposures. Miller was visiting Senior Scientist in the IARC Monographs programme as a reviewer to the scientific literature supporting designation of Radiofrequency Electromagnetic Fields (RF-EMF) as a Group 2B possible carcinogen in 2011.

Cancer Expert Declares Cell Phone and Wireless Radiation as Carcinogenic to Humans

https://www.emrsa.co.za/cancer-expert-declares-cell-phone-and-wireless-radiation-as-carcinogenic-to-humans/

BIO

Dr. Anthony B. Miller (Professor Emeritus at the Dalla Lana School of Public Health of the University of Toronto) is a physician epidemiologist specialising in cancer etiology, prevention, and screening.

It is his scientific opinion that radiofrequency (RF) radiation from any source – such as the signals emitted by cell phones, other wireless and cordless and sensor devices, and wireless networks – fully meets criteria to be classified as a "Group 1 carcinogenic to humans" agent, based on scientific evidence associating RF exposure to cancer development and cancer promotion.

"The evidence indicating wireless is carcinogenic has increased and can no longer be ignored", stated Dr. Anthony B. Miller at a July 31, 2017 lecture in Jackson Hole, Wyoming sponsored by the Environmental Health Trust where international experts presented the best available science on cell phone and wireless radiation. In 2011, WHO/IARC classified RF radiation from any source as a "Group 2B

possibly carcinogenic to human" agent. Miller believes the evidence published since 2011 fulfills the requirements to re-classify RF radiation as a "Group 1 carcinogenic to humans" agent.

Miller explained that the basis for his opinion includes recent scientific publications which include the 2017 re-analysis of data from the Interphone study, the 2014 French National CERENAT Study, several new publications on Swedish cancer data, and the 2016 results of the National Toxicology Program.

Other experts agree that the increased evidence now establishes RF radiation as a human carcinogen. For example, researchers Dr. Lennart Hardell and Michael Carlberg have published several epidemiological studies that found increased brain cancer associated with long-term cell phone use and conclude that "RF radiation should be regarded as a human carcinogen causing glioma." In addition, published epidemiological research has also found persons diagnosed with brain cancer had decreased survival rates associated with higher wireless phone use.

In response to skeptics who claim, "There is no evidence," researchers point to published research that has consistently found increased cancer risk in well-designed case control studies that have looked at persons who used cell phones for more than ten years.

The July 31, 2017 panel presentation included international experts. Dr. Annie Sasco presented the WHO/IARC process used to classify carcinogenic agents. Dr. Devra Davis presented research finding wireless radiation results in sperm damage and alters brain development. Dr. Moe Mellion presented Dr. Iris Udasin's clinical cases of World Trade Center first responders who developed brain cancer after combined environmental exposures to chemical toxins and wireless radiation. Theodora Scarato, MSW presented policies enacted by governments worldwide to reduce RF radiation exposures. Dr. Marc Arazi presented data released by the cell phone radiation test program of the Government of France, which found that when cell phones are tested in body contact positions, RF radiation exposure exceeds regulatory limits. Environmental Health Trust plans to post all lectures and videos from the July 31, 2017 presentation online.

Scientific Publications on Cell Phone Radiation and Cancer Referenced in Dr. Miller's Presentation
https://ehtrust.org/references-cell-phone-radio-frequency-radiation-cancer/

Watch an excerpt from Dr. Anthony Miller's lecture on July 31, 2017
https://www.youtube.com/watch?v=bgGJeOVEdQs

Source: http://www.sbwire.com/press-releases/cancer-expert-declares-cell-phone-and-wireless-radiation-as-carcinogenic-to-humans-849135.htm

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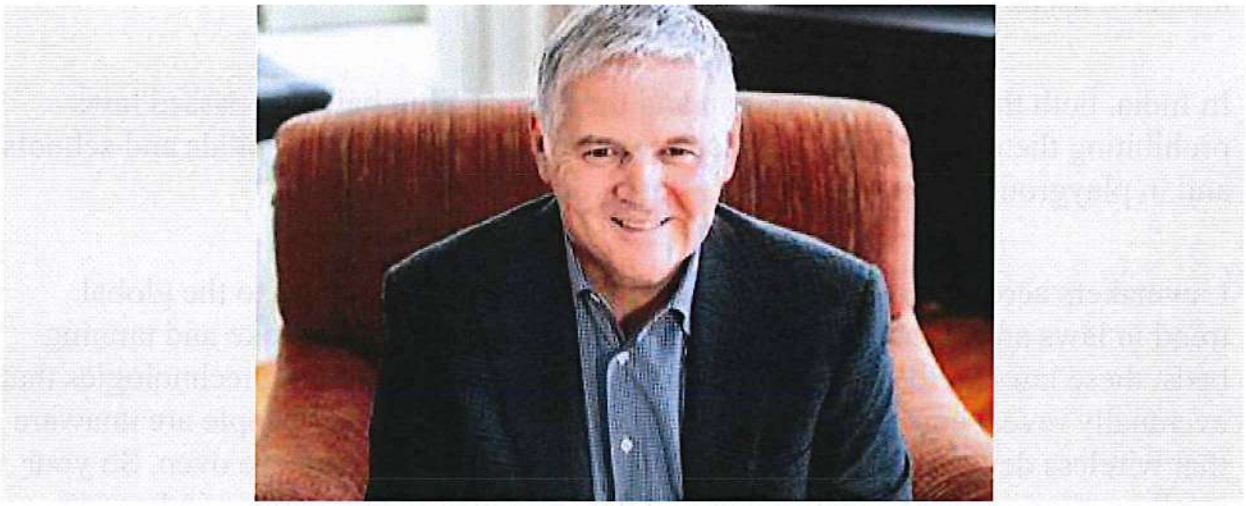
Frank Clegg, former president of Microsoft Canada weighs in on dangers of wireless radiation:

Invisible Threat



Frank Clegg, former president of Microsoft Canada, is now an advocate for wireless radiation safety.

The Link Between Wireless Radiation and a Host of Serious Illnesses

The longtime president of Microsoft Canada is now our country's leading advocate for wireless radiation safety. Vitality invited high tech leader Frank Clegg, now

CEO of the new non-profit organization, Canadians for Safe Technology (C4ST), to update our readers on what Canada is (or is not) doing to protect your health, and what you can do in this election year to protect yourself and your children. Here is a report on his research and conclusions.

It has been three years since the World Health Organization shocked the medical community by warning that exposure to microwave radiation from wireless devices might increase our cancer risk. If the same elite cancer specialists were to meet again today, the warning would be upgraded from a "possible carcinogen" to a "probable carcinogen." That is according to Professor Emeritus Anthony Miller, of the University of Toronto, who was speaking recently to Toronto's Public Works and Infrastructure Committee. (1)

Since 2011, governments around the world have alerted their populations to approach wireless devices with caution. In Belgium, it will soon be illegal to sell or market "kiddie-phones," mobile phones that are specially designed for children. (2)

In France, the government "recommends limiting the population's exposure to radiofrequencies – in particular from mobile phones – especially for children and intensive users." (3)

In India, both the State of Rajasthan and the City of Mumbai have passed laws prohibiting the placement of cellular antennae on the roofs of hospitals and schools and in playgrounds because they are "hazardous to life." (4)

Lawmakers across our globe are developing safety rules. Similar to the global trend in laws around seat belts, lawn-pesticides, second hand smoke and tanning beds, these laws are designed to protect the public from emerging technologies that eventually reveal emerging evidence of potential harm. Many people are unaware that wireless devices use microwaves, the same as your microwave oven. So your cordless phone, Wi-Fi, smart meter and the cell tower outside your window are effectively functioning as low-level, constantly-emitting, microwave transmitters.

In Canada, various levels of government are largely ignoring the warning from the W.H.O. and are instead hiding behind "Safety Code 6," (5) an archaic federal guideline that is allowing Canada's globally envied health care system to ignore our biggest modern health threat.

The Link Between Wireless Radiation and Illness

Since I helped found Canadians For Safe Technology (www.C4ST.org), I have personally met too many people who are suffering from over-exposure to wireless radiation. Cancer isn't the only risk. About 10 years ago Bill Townsend, a former radio talk show host who now works at Humber College, was the father of a sick family. His very young son had been in surgery for his tonsils, and his even younger son had been diagnosed with adenoid swelling that was resulting in a lack of sleep. His wife had chronic skin rashes that had progressed to her face and also suffered dizziness. When his wife's doctor found she had the same adenoid swelling as their son, he scheduled both Bill's son and his wife for surgery on the same day. Bill became suspicious when he started to get sinus swelling himself. So he conducted an internet search and found information linking Wi-Fi to sudden onset chronic health problems including heart irregularity, headaches, nausea, poor sleep, as well as skin rashes and sinus swelling.
Bill then realized there was a direct link between his family's health decline and the installation of a Wi-Fi router in his house. He made a simple decision to turn off the Wi-Fi, and instead hardwire all computers in his home. His wife and son's symptoms reversed so quickly that on the day before surgery their doctor gave them both a clean bill of health and cancelled both operations. Bill's own symptoms also quickly disappeared.

In every story I hear, the hidden cost of so much wireless radiation in our lives is being borne by our provincial healthcare system. The provinces are blindly following the federal government's outdated Safety Code 6 – even though Safety Code 6 is only a guideline for federal buildings. No one knows how many people are sick or will become sick from this radiation, but scientists estimate about 3% of people have an immediate reaction. That means about one million Canadians. Many others – about 20% of people – will develop symptoms over time, like Bill Townsend did. These people have what Doctors call electrosensitivity or ES.

Increasing Rates of Electrosensitivity

Electrosensitivity is not like an allergy you are born with; it is an illness that builds up over increased time and radiation exposure. Just as we cannot yet explain why some individuals will die from second-hand smoke and others can live a long life smoking 2 packs a day, we cannot explain why some individuals react to wireless radiation. But with more and more cell towers and smart meters crowding into our

living spaces, with Wi-Fi in buses, schools, trains, offices and hotels, people who are sensitive now struggle to work, travel and support their families.

Women's College Hospital in Toronto has an environmental health clinic that has seen its waiting list balloon to over 6 months for patients struggling with electrosensitivity. Health Canada is dangerously behind other countries in recognizing electrosensitivity. It is disturbing to note that Health Canada historically did recognize that some people get sick from microwave radiation. But in the last "update" of the Safety Code in 2009, the only significant change was to delete the single sentence that read:

"Certain members of the general public may be more susceptible to harm from RF and microwave exposure."

This acknowledgement that some people are susceptible to harm from wireless radiation had been part of the safety code for more than a decade. It vanished about the same time Wi-Fi was rolled out into all schools and offices. (6)

That is in stark contrast with Sweden, where electrosensitivity is an officially recognized impairment. Some hospitals have built special rooms with very low wireless radiation so that people who are sensitive can get medical care. (7)

In 2012, the Austrian Medical Association also adopted guidelines for the diagnosis and treatment of illness caused by wireless radiation. (8) Austria's checklist for physicians lists the following symptoms: sleep problems, fatigue, exhaustion, lack of energy, restlessness, heart palpitations, blood pressure problems, muscle and joint pain, headaches, depression, difficulty concentrating, forgetfulness, anxiety, urinary urgency, anomia (difficulty finding words), dizziness, tinnitus and sensations of pressure in the head and the ears, tightness in chest, hyperactivity, irritability, noise sensitivity, burning sensation in the eyes and skin conditions.

I encourage everyone who is reading this with unexplained chronic health problems – including disturbed sleep – to turn off every wireless device in their home for a week.

http://vitalitymagazine.com/article/invisible-threat/

VIDEO - 2 minutes

I'm submitting this very brief video (about 2 minutes) of Dr. David O. Carpenter discussing smart meters:

https://www.youtube.com/watch?v=n7L21XOC2wA&t=54s

BIO

David O. Carpenter is a public health physician who serves as director of the Institute for Health and the Environment, a Collaborating Center of the World Health Organization, as well as a professor of environmental health sciences at UAlbany's School of Public Health. He previously served as Director of the Wadsworth Center of the New York State Department of Health, and as Dean of the University at Albany School of Public Health. Carpenter, who received his medical degree from Harvard Medical School, has more than 435 peer-reviewed publications, 6 books and 50 reviews and book chapters to his credit.

Note: 5G refers to the next generation of wireless technology which entails non-ionizing radiation RF radiation, the same type of radiation emitted by smart meters.

At the end of this appeal I included a list of the scientists and doctors who signed on to this document.

EU Appeal: Scientists and doctors call for moratorium on 5G, warn of serious health risks; RF-EMF proven harmful

Posted on September 18, 2017

We the undersigned, more than 180 scientists and doctors from 36 countries, recommend a moratorium on the roll-out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry. 5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment.

APPEAL

5G leads to massive increase of mandatory exposure to wireless radiation

5G technology is effective only over short distance. It is poorly transmitted through solid material. Many new antennas will be required and full-scale implementation will result in antennas every 10 to 12 houses in urban areas, thus massively increasing mandatory exposure.

With "the ever more extensive use of wireless technologies," nobody can avoid to be exposed. Because on top of the increased number of 5G-transmitters (even within housing, shops and in hospitals) according to estimates, "10 to 20 billion connections" (to refrigerators, washing machines, surveillance cameras, self-driving cars and buses, etc.) will be parts of the Internet of Things. All these together can cause a substantial increase in the total, long term RF-EMF exposure to all EU citizens.

Harmful effects of RF-EMF exposure are already proven

Over 230 scientists from more than 40 countries have expressed their "serious concerns" regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices already before the additional 5G roll-out. They refer to the fact that "numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines". Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plants and animals.

After the scientists' appeal was written in 2015 additional research has convincingly confirmed serious health risks from RF-EMF fields from wireless technology. The world's largest study (25 million US dollar) National Toxicology Program (NTP), shows statistically significant increase in the incidence of brain and heart cancer in animals exposed to EMF below the ICNIRP (International Commission on Non-Ionizing Radiation Protection) guidelines followed by most countries. These results support results in human epidemiological studies on RF radiation and brain tumour risk. A large number of peer-reviewed scientific reports demonstrate harm to human health from EMFs.

The International Agency for Research on Cancer (IARC), the cancer agency of the World Health Organization (WHO), in 2011 concluded that EMFs of frequencies 30 KHz – 300 GHz are possibly carcinogenic to humans (Group 2B). However, new studies like the NTP study mentioned above and several epidemiological investigations including the latest studies on mobile phone use and brain cancer risks confirm that RF-EMF radiation is carcinogenic to humans.

The EUROPA EM-EMF Guideline 2016 states that "there is strong evidence that long-term exposure to certain EMFs is a risk factor for diseases such as certain cancers, Alzheimer's disease, and male infertility…Common EHS (electromagnetic hypersensitivity) symptoms include headaches, concentration difficulties, sleep problems, depression, lack of energy, fatigue, and flu-like symptoms."

An increasing part of the European population is affected by ill health symptoms that have for many years been linked to exposure to EMF and wireless radiation in the scientific literature. The International Scientific Declaration on EHS & multiple chemical sensitivity (MCS), Brussels 2015, declares that: "In view of our present scientific knowledge, we thereby stress all national and international bodies and institutions…to recognize EHS and MCS as true medical conditions which acting as sentinel diseases may create a major public health concern in years to come worldwide i.e. in all the countries implementing unrestricted use of electromagnetic field-based wireless technologies and marketed chemical substances… Inaction is a cost to society and is not an option anymore… we unanimously acknowledge this serious hazard to public health…that major primary prevention measures are adopted and prioritized, to face this worldwide pan-epidemic in perspective."

Precautions

The Precautionary Principle (UNESCO) was adopted by EU 2005: "When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm."

Resolution 1815 (Council of Europe, 2011): "Take all reasonable measures to reduce exposure to electromagnetic fields, especially to radio frequencies from mobile phones, and particularly the exposure to children and young people who seem to be most at risk from head tumours…Assembly strongly recommends that the ALARA (as low as reasonably achievable) principle is applied, covering both the so-called thermal effects and the athermic [non-thermal] or biological effects of electromagnetic emissions or radiation" and to "improve risk-assessment standards and quality".

The Nuremberg code (1949) applies to all experiments on humans, thus including the roll-out of 5G with new, higher RF-EMF exposure. All such experiments: "should be based on previous knowledge (e.g., an expectation derived from animal experiments) that justifies the experiment. No experiment should be conducted, where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects." (Nuremberg code pts 3-5). Already published scientific studies show that there is "a priori reason to believe" in real health hazards.

The European Environment Agency (EEA) is warning for "Radiation risk from everyday devices" in spite of the radiation being below the WHO/ICNIRP standards. EEA also concludes: "There are many examples of the failure to use the precautionary principle in the past, which have resulted in serious and often irreversible damage to health and environments…harmful exposures can be widespread before there is both 'convincing' evidence of harm from long-term exposures, and biological understanding [mechanism] of how that harm is caused."

"Safety guidelines" protect industry — not health

The current ICNIRP "safety guidelines" are obsolete. All proofs of harm mentioned above arise although the radiation is below the ICNIRP "safety guidelines". Therefore new safety standards are necessary. The reason for the misleading guidelines is that "conflict of interest of ICNIRP members due to their relationships with telecommunications or electric companies undermine the impartiality that should govern the regulation of Public Exposure Standards for non-ionizing radiation…To evaluate cancer risks it is necessary to include scientists with competence in medicine, especially oncology."

The current ICNIRP/WHO guidelines for EMF are based on the obsolete hypothesis that "The critical effect of RF-EMF exposure relevant to human health and safety is heating of exposed tissue." However, scientists have proven that many different kinds of illnesses and harms are caused without heating ("nonthermal effect") at radiation levels well below ICNIRP guidelines.

We urge EU:

1) To take all reasonable measures to halt the 5G RF-EMF expansion until independent scientists can assure that 5G and the total radiation levels caused by RF-EMF (5G together with 2G, 3G, 4G, and WiFi) will not be harmful for EU-citizens, especially infants, children and pregnant women, as well as the environment

2) To recommend that all EU countries, especially their radiation safety agencies, follow Resolution 1815 and inform citizens, including, teachers and physicians, about health risks from RF-EMF radiation, how and why to avoid wireless communication, particularly in/near e.g., daycare centers, schools, homes, workplaces, hospitals and elderly care.

3) To appoint immediately, without industry influence, an EU task force of independent, truly impartial EMF-and-health scientists with no conflicts of interest1 to re-evaluate the health risks and:

a) To decide about new, safe "maximum total exposure standards" for all wireless communication within EU.

b) To study the total and cumulative exposure affecting EU-citizens.

c) To create rules that will be prescribed/enforced within the EU about how to avoid exposure exceeding new EU "maximum total exposure standards" concerning all kinds of EMFs in order to protect citizens, especially infants, children and pregnant women.

4) To prevent the wireless/telecom industry through its lobbying organizations from persuading EUofficials to make decisions about further propagation of RF radiation including 5G in Europe.

5) To favor and implement wired digital telecommunication instead of wireless.

We expect an answer from you no later than **October 31, 2017** to the two first mentioned signatories about what measures you will take to protect the EU-inhabitants against RF-EMF and especially 5G radiation. This appeal and your response will be publicly available.

Respectfully submitted,

***Rainer Nyberg**, EdD, Professor Emeritus (Åbo Akademi), Vasa, Finland (NRNyberg@abo.fi)*

***Lennart Hardell**, MD, PhD, Professor (assoc) Department of Oncology, Faculty of Medicine and Health, University Hospital, Örebro, Sweden (lennart.hardell@regionorebrolan.se)*

Note

1 Avoid similar mistakes as when the Commission (2008/721/EC) appointed industry supportive members for SCENIHR, who submitted to EU a misleading SCENIHR report on health risks, giving telecom industry a clean bill to irradiate EU-citizens. The report is now quoted by radiation safety agencies in EU.

Signatories to Scientists' 5G Appeal

Note: The endorsements are personal and not necessarily supported by the affiliated universities or organizations. Updated with new Signatories: September 15, 2017

EU and European Nations

AUSTRIA
Gerd Oberfeld, MD, Public Health Officer, Salzburg

BELGIUM
Marie-Claire Cammaerts, Dr, retired, Free University of Brussels, Bruxelles André Vander Vorst, Prof. em. Belgium

BULGARIA
Marko Markov, Professor Emeritus, Ph.D. in biophysics, Sofia University, Research international

CYPRUS
Stella Canna Michaelidou, Dr, Chemist Expert on Environment, Health and Food Safety, President of the Cyprus National Committee on Environment and Children's Health

FINLAND
Marjukka Hagström, LL.M, M.Soc.Sc., Senior researcher, The Finnish Electrosensitivity Foundation, Turku

Osmo Hänninen, PhD, Professor Emeritus, Dept. of Physiology, Faculty of Medicine, University of Eastern Finland; Editor-In-Chief, Pathophysiology, Kuopio

Georgiy Ostroumov, PhD (in the field of RF EMF), independent researcher

FRANCE
Marc Arazi, MD, Physician (Whistleblower on Phonegate international scandal), Nogent-sur-Marne

Dominique Belpomme, MD, MSc, Full Professor in Medical Oncology; Director of ECERI, Paris University, Paris & European Cancer and Environment Research Institute, Brussels

Philippe Irigaray, PhD, Scientific Director, Association for Research on Treatment against Cancer (ARTAC), Paris; European Cancer and Environment Research Institute (ECERI), Brussels

Vincent Lauer, Ing. ECP, Independent Researcher, La Chapelle sur Erdre

Annie J Sasco, MD, DrPH, Former Director of Research, French National Institute of Health and Medical Research, Former Chief of Epidemiology for Cancer Prevention at the International Agency for Research on Cancer and Former Acting Chief of Program for Cancer Control, World Health Organization, Bordeaux

GERMANY
Franz Adlkofer, MD, Professor, Pandora-Foundation for Independent Research

Christine Aschermann, MD (retired) member of the Kompetenzinitiative e.V., Leutkirch

Mario Babilon, Dr. rer. nat., Professor, Baden-Wuerttemberg Cooperative State University Stuttgart

Wolf Bergmann, Dr. med., Kompetenzinitiative zum Schutz von Mensch, Umwelt und Demokratie e.V., Freiburg

Rainer Frentzel-Beyme, MD, Professor emeritus, University of Bremen.

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Links:

http://www.saferemr.com/2017/09/5G-moratorium12.html
https://ehtrust.org/scientists-and-doctors-demand-moratorium-on-5g-warning-of-health-effects/
https://www.globalresearch.ca/scientists-and-doctors-warn-of-potential-serious-health-impacts-of-fifth-generation-5g-wireless-technology/5609503

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VIDEO

This video discusses various aspects of smart meters radiation along with showing clusters of cancer closest to microwave transmitters. It runs about 10 minutes.

The Dark Side of Smart Meters – Mr. Rob States

https://www.youtube.com/watch?v=FLeCTaSG2-U

Exposure to Magnetic Field Non-Ionizing Radiation and the Risk of Miscarriage: A Prospective Cohort Study

De-Kun Li, Hong Chen, Jeannette R. Ferber, Roxana Odouli & Charles Quesenberry

In this study, we found an almost three-fold increased risk of miscarriage if a pregnant woman was exposed to higher MF levels compared to women with lower MF exposure. The association was independent of any specific MF exposure sources or locations, thus removing the concern that other factors connected to the sources of the exposure might account for the observed associations.

Given the ubiquitous nature of exposure to this non-ionizing radiation, a small increased risk due to MF exposure could lead to unacceptable health consequences to pregnant women.

Full study available at: https://www.nature.com/articles/s41598-017-16623-8

APPENDIX "C"

Please identify each person you plan to call as a fact witness in this proceeding. For each person, please:

ANSWER

At the moment I don't plan to call any witnesses.

APPENDIX "D"

Please identify each person you plan to call as an expert witness in this proceeding.

ANSWER

At the moment I don't plant to call any expert witnesses.

VERIFICATION

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF LEHIGH

I, William J. Hennegan, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief, and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

William J. Hennegan