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The Victorian Civil and Administrative Tribunal
Human Rights Division
Human Rights List
VCAT Reference: H114/2014

Dear Tribunal members

I have been asked to tender my opinion regards Sofia Telemzouguer's case with United Energy Distribution Pty Ltd. This is specifically on Ms. Telemzouguer's claim that the initial installation of Advanced Metering Infrastructure, namely a smart meter has caused her subsequent illness - leading to her removal of the meter and subsequent events.

I assume that the Tribunal's central task is to determine, as far as possible, the actual cause of Ms. Telemzouguer's current illness. This could be defined as:

- Is it a nocebo effect, which is a psychosomatic reaction to learning that a smart meter was installed and subsequently worrying about it to the point of exhibiting adverse symptoms which are unrelated to the smart meter, or:
- Is it resulting from exposure to microwave radiation from the smart meter, which was initially installed on her premises while she was away, resulted in a condition called electro hypersensitivity (EHS).

The best way to help determine this would be with actual testing, either by a sleep study or a provocation study (more on these later). Anything less, such as a doctor examining her in her home or doctor's office would be of limited value in my opinion. However a close examination (below) of both the above mentioned points might help clarify the issue.

Brief particulars of Ms Telemzouguer's illness

While Ms. Telemzouguer was away on a business trip a smart meter was installed on an external wall of her home on March 19, 2013, replacing the existing analogue meter. The new meter was placed in the existing cavity with just a plaster wall panel behind the back of the meter and her bedroom. The meter was located approximately 150 cm from her bedhead. After returning to her home, on March 22nd and 23rd she experienced an excruciating headache while trying to sleep. On March 24 she found the letter from Energy Safe Victoria informing her that a smart meter had been installed on her home. The nighttime headaches continued and she soon developed a burning sensation in her eyes and deterioration in her eyesight. Other symptoms included: Nausea, Eczema/rash, swollen limbs, chronic fatigue, lack of concentration, nighttime tremors, and an increased susceptibility to infections. On October 6, 2013 Ms Telemzouguer had the smart meter removed and replaced with an analogue meter. This has resulted in a marked improvement in her health but she has become sensitive to other sources of radiofrequency radiation possible as a consequence of her nighttime smart meter exposure. A more detailed report on the medical aspects of Ms. Telemzouguer illness is

detailed in the consultation notes of Dr. John Piesse which have been submitted to the Tribunal. **Appendix A** also gives a number of other similar anecdotal cases in Melbourne.

A never-ending controversy: Is electrosensitivity (EHS) a medical or psychological (nocebo) disorder?

Central to the nocebo claim with the reported smart meter health complaints is the proposition that without a conscious pre-existing worry there would be no symptoms at all, in other words, it's all in the mind. With this rather arrogant viewpoint, all the adverse smart meter health reports being reported in Victoria and elsewhere are conveniently dismissed as the result of individuals from the uninformed public hearing or reading about the alleged health effects and then, when smart meters are rolled out in their neighborhood they worry themselves sick.

Professor Andrew Wood from the Brain and Psychological Sciences Research Centre at Swinburne University of Technology, in his report on smart meters, suggests that the nocebo effect may play a role in symptoms being reported.[1]

More recently, a January 2015 report from the 240 member European Economic and Social Committee (EESC) gave its opinion that electrosensitivity, though needing a sympathetic approach, was a psychological problem. This opinion, was a complete reversal from the earlier, December 19, 2014 draft opinion by the 110 members of the TEN/559 EESC sub-committee. In that committee, after a detailed investigation and hearings, they expressed the opinion that it was necessary to take EHS seriously and to establish preventative measures to protect people suffering from EHS as well as future generations.[2]

However the draft opinion of the TEN/559 sub-committee was rejected by the other 136 EESC members after intense lobbying and a counter-opinion[3] presented to the committee by UK member Richard Adams OBE. Adams, as reported by the UK Powerwatch group, however, has a substantial and undisclosed conflict of interest in his dismissal of EHS as a medical condition. Adams is a trustee for the charity *Sustainability First*, which is sponsored by the industry trade group BEAMA (which represents 300 electrotechnology firms) Cable & Wireless, Consumer Futures, British Gas, EDF Energy, Elexon E-Meter (Siemens), EON UK, National Grid, Northern Powergrid, Ofgem (the UK electricity industry Regulator), Scottish Power Energy Networks, and UK Power Networks. He is also a member of the Corporate Responsibility Stakeholder Council at RWE AG (one of Europe's five biggest electricity and gas utilities). All these organisations are promoting the smart grid technology and the installation of RF emitting Smart Meters.[4] An official recognition of EHS as a medical condition by EESC would be a substantial risk to further development of the smart grid and associated technologies and that possibility would have been a concern to Adams and the other members who voted to squash the TEN/559 sub-committee's December 2014 alternative opinion.

Interestingly, Mr. Adams in his rejection of EHS as a medical condition also attacked the

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[1] A Wood, Comparison of the Preliminary Victorian Study To Other Overseas Studies, in AMI MeterElectromagnetic Field Survey . Final Report . Prepared for the Department of Primary Industries, App. A, pp. 87-94
87-94,

[2] DRAFT OPINION of the Section for Transport, Energy, Infrastructure and the Information Society on Electromagnetic hypersensitivity EESC, Dec 19, 2014, https://toad.eesc.europa.eu/ViewDoc.aspx?doc=ces%5cten%5cten559%5cES%5cEESC-2014-05117-00-00-PA-TRA_EN.doc&docid=3040363

[3] R Adams, AMENDMENT 1, COUNTER OPINION, https://toad.eesc.europa.eu/ViewDoc.aspx?doc=ces%5cten%5cten559%5cEN%5cEESC-2014-05117-00-01-AS-TRA_EN.doc&docid=3046232

[4] A. Phillips, *Powerwatch News*, Jan. 21, 2015. http://www.powerwatch.org.uk/news/2015-01-20-eesc-final-opinion.asp

scientific credibility of IARC committee member Professor Lennart Hardell. It was the published findings of Hardell's research group that was the main basis for the IARC classifying radiofrequency emissions as a Class 2B possible human carcinogen. In Hardell's rebuttal to Adams he pointed out the obvious. His group's research was on brain tumour risk associated with use of wireless phones (mobile phones and cordless phones) and not electromagnetic hypersensitivity.

If we consider the warning of International Committee of Medical Journal Editors (ICMJE) in their "uniform requirements" statement, the scientific objectivity and validity of the final EESC opinion is very questionable. To quote from the ICMJE, in part:

> Financial relationships (such as employment, consultancies, stock ownership, honoraria, and paid expert testimony) are the most easily identifiable conflicts of interest and the most likely to undermine the credibility of the journal, the authors, and of science itself.[5]

It must be acknowledged that the nocebo effect (and its opposite, the placebo effect) are well recognized as real conditions. For example, in tribal Australian aborigines the act of "pointing the bone" by a tribal shaman (a form of voodoo curse) at an accused wrongdoer has been known to cause death of the wrongdoer. The necessary element being that the accused person must firmly believe in the power of the curse. Paul Martin's book, *The Sickening Mind: Brain, Behaviour, Immunity and Disease*, is replete with examples of the complex interplay between a person's state of mind and its effect on the immune system, and vice versa.[6] Considering the evidence, it is entirely possible that, with the widespread internet information available about possible smart meter health hazards, some psychologically vulnerable people who have had a smart meter installed on their home will succumb to worry and exhibit EHS symptoms that are not related to exposure.

However, to then assume that this is true for all cases is not valid scientifically, especially, and most importantly, if it can be shown that onset of symptoms in many of the reported cases preceded an awareness of installation of a smart meter.

In conducting population-based research on EHS it's important to consider both the placebo and the nocebo effects. For this reason, in an Australian study on EMF exposure which examined residential exposures to mains-power magnetic fields (not RF) in a group of chronic fatigue patients, a decision was made at the onset not to include subjects who had any preconception that their illness might be caused by electromagnetic field exposure. In other words, none of the participants were worried about EMF, thus a nocebo effect was ruled out as far as possible. It was found that reducing "excessive" night-time ELF magnetic fields significantly improved fatigue symptoms and quality of sleep. Interestingly, one of the symptoms reported, tinnitus, especially at night, disappeared after removal of the source of exposure which were sources close to the bedhead, such as a analogue meter box or phone charge transformer.[7]

The absence of any nocebo effect was also seen in a WorkCare compensation case that took place in Melbourne in 1991–1992. In this case, a number of women who had worked in an office directly over an electrical substation had remarkably similar symptoms that ceased when they no longer worked in the area. None of the women had any idea that there were high power-frequency magnetic fields (not RF) in the office. Common

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[5] The International Committee of Medical Journal Editors "uniform requirements" statement. http://www.icmje.org/ethical_4conflicts.html

[6] P. Martin, *The Sickening Mind: Brain, Behaviour, Immunity and Disease*, Flamingo, 1997

[7] D. Maisch, B. Rapley, J. Podd, Changes in Health Status in a Group of CFS and CF Patients Following Removal of Excessive 50 Hz Magnetic Field Exposure, *JACNEM,* Vol. 21 No. 1; April 2002: pages 15-19 http://www.emfacts.com/download/cfs_changes.pdf

symptoms were chronic tiredness/fatigue, insomnia, stress, prone to viral infections, inability to concentrate, depression, facial rashes and headaches. One woman summed it up as "a permanent severe case of jet lag". [8]

The absence of a nocebo effect was suggested in a study of population effects of a shortwave RF transmitter facility at Schwarzenburg, near Berne, Switzerland. In the early 1990s, a study was conducted because of persistent health complaints in the population near the transmitters. The findings were "highly suggestive of a direct effect of the radio shortwave transmitter on sleep quality" (disturbances in falling asleep and maintaining sleep). Other effects found were restlessness, joint pain, disturbances in concentration, general weakness and tiredness. The researchers specifically looked for a nocebo effect, which they called "health-worry personality", but found no evidence of it. This was highlighted when the transmitter was turned off unexpectedly, unknown to the residents, in the middle of the study. Normal sleep patterns re-established until the transmitter was turned on again, at which point deterioration set in once more. The authors concluded that "our findings support a relationship between operation of the radio transmitter under investigation and sleep disturbances in the exposed population…From a public health perspective, our findings call for caution in exposing populations to EMF from short-wave radio transmitters." [9]

As for the prevalence electrosensitivity in America, the American Academy of Environmental Medicine have released a statement that recognize that patients are being adversely impacted by EMF (power frequency) and RF fields and are becoming more electromagnetically sensitive. The AAEM recommended that physicians consider patients' total electromagnetic exposure in their diagnosis and treatment, as well as recognition that EMF and RF fields exposure may be an underlying case of a patient's disease process. [10]

In my opinion the nocebo effect may be a factor in some smart meter health complaints but that this a distraction from the possibility that we are facing a significant public health risk that has not yet been investigated because of an entrenched preconception that it's just all in the mind. **Appendix A** contains a number of anecdotal reports from Victorians who are apparently affected by smart meter exposure. It is hard, in my opinion, do just dismiss this as just a psychosomatic phenomenon.

What about compliance with the standards?

It is often claimed that even in a worst-case scenario smart meter emissions are far below the allowable limits of the above standards. This was found in an AMI Meter Electromagnetic Field Survey conducted by EMC Technologies in Melbourne which found that exposure levels were well below the general public limit set by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). I generally agree with that report. However any claims that compliance with the ARPANSA standard therefore

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[8] D. Maisch, D., (compiled) The Ross House Substation: Chronic Fatigue Syndrome (CFS) symptoms attributed to exposure to electromagnetic fields (EMF) due to proximity to an electrical substation, Workcare compensation case, Melbourne Victoria, 1991-1992, February 1999. Full report available upon request, Summary: http://www.emfacts.com/download/The_Ross_House_Electrical_Substation.pdf

[9] N. Cherry, Swiss shortwave transmitter study sounds warning, *Electromagnetics Forum,* Vol. 1, No. 2, Article 10, http://www.emfacts.com/forum/issue2/mag_9.html

[10] AAEM position paper, Electromagnetic and Radiofrequency Fields Effect on Human Health, http://aaemonline.org/emf_rf_position.html

assures safety does not stand up to scrutiny and such claims were examined in my thesis. The standard exposure limits do assure protection from acute exposure situations (short term exposure) where actual excessive internal body heating can cause significant biological damage. However, the above-mentioned RF standards/guidelines exposure limits do **not** provide protection against lower-level chronic radiofrequency exposures such as from smart meters. Therefore, consideration of other possible biological effects unrelated to heating has not been taken into account in the actual setting of maximum exposure limits in RF standards, including Australia's. Considering this, any assurance of smart meter safety based on these standards is disingenuous.

Characteristics of smart meter emissions

In examining the anecdotal cases of ill health continued to come from Victoria (and overseas) many of the reported cases are from people who had their analogue meter replaced by a smart meter and that location was on their bedroom wall, suggesting that proximity at night may be a factor.

Besides proximity, it turns out that the number of smart meter transmissions is not limited to four to six per 24 hour day, as claimed by a number of industry sources, but could be many thousands of very brief 'spikes' of RF energy over that time. This is clearly seen in Table 1, taken from a document from Pacific Gas and Electric Co. where over a 24-hour period up to 190,000 transmission pulses can occur.[11] These are very brief but frequent transmissions, as seen in Table 2.

Table 1

Electric System Message Type	Transmission Frequency Per 24-Hour Period: Average	Transmission Frequency Per 24-Hour Period: Maximum (99.9th Percentile)
[a]	[b]	[c]
Meter Read Data	6	6
Network Management	15	30
Time Synch	360	360
Mesh Network Message Management	9,600	190,000
Weighted Average Duty Cycle	45.3 Seconds[4]	875.0 Seconds

Table 1 presents scheduled smart meter system messages and their durations. This is only for the 900Mhz smart meter transmitter radio and represents data for all scheduled messages that are required to sustain the mesh network communications.

As for the reason for all these brief transmissions, a 2013 report by Richard Tell Associates, states the following:

> Smart meters emit short duration pulses of RF energy in their communication with other meters and data collection points. These emissions generally happen all through the day. Besides the normal three (in the case of BED) or four (in the case of GMP) times a day that electric energy consumption data are reported back to a data collection point for subsequent transmission to the company, smart meters must maintain their organization within the RF LAN to which they belong and this necessitates the transmission of beacon signals from time to time. Additionally, each meter can, when required by the mesh network, assist neighbouring smart meters by transmitting the neighbour's data on to another meter or data collection point. Further, the HAN radio can produce pulsed fields in its search for and communication

[11] Ref: Pacific Gas and Electric Co., http://emfsafetynetwork.org/wp-content/uploads/2011/11/PGERFDataOpt-outalternatives_11-1-11-3pm.pdf

with IHDs. All of this means that most smart meters remain relatively active in terms of brief signals being transmitted.[12]

As for what this activity might look like in a 'real world' situation, **Table 2** (following page) shows measurements taken outside, one metre externally from a smart meter on a suburban house in Melbourne, Victoria Australia.[13]

Table 2

SMART METER TRANSMISSION INTERVALS

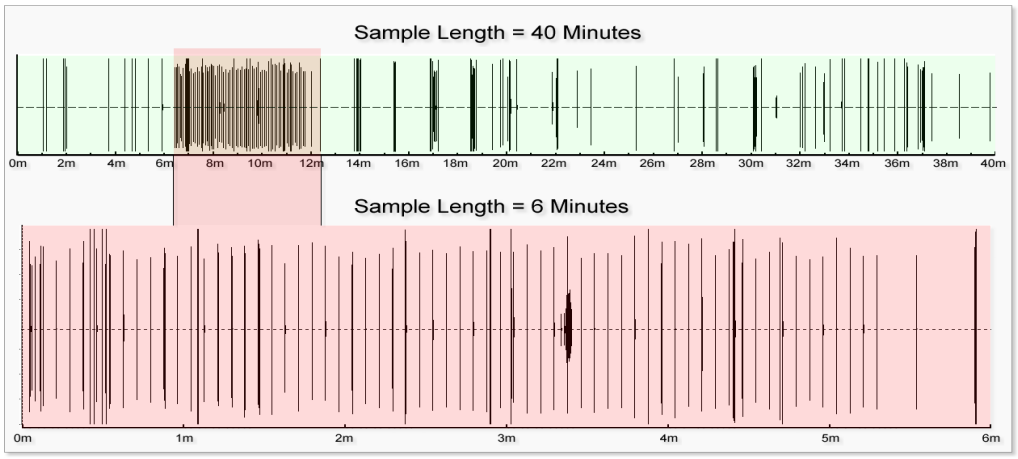

Table 3

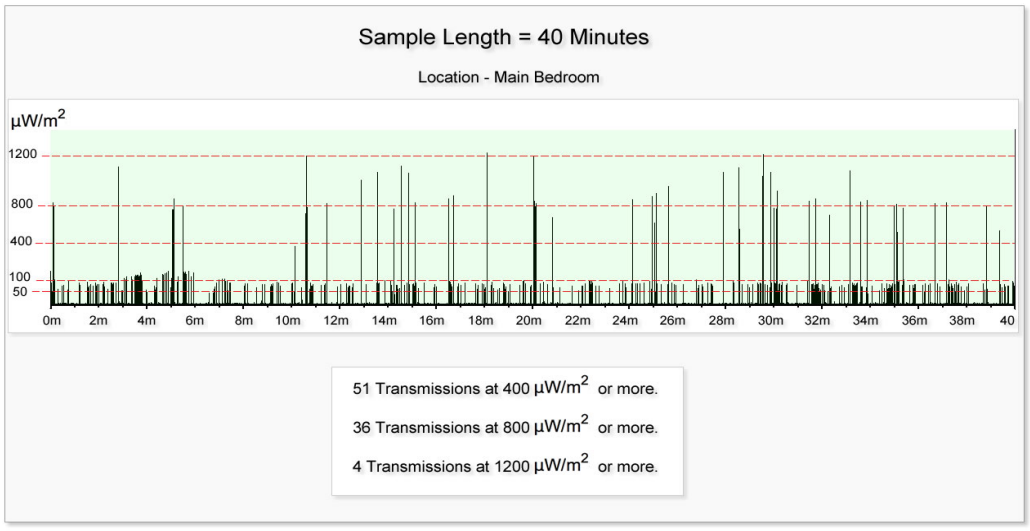

Table 3 shows the same house, this time with measurements taken by the bedhead in a bedroom adjacent to the smart meter. These levels are well below the Australian RF standard which is irrelevant to this situation.

The 900 MHz frequency used by smart meters may also be an issue

[12] Richard Tell Associates, An Evaluation of Radio Frequency Fields Produced by Smart Meters Deployed in Vermont,: http://publicservice.vermont.gov/sites/psd/files/Topics/Electric/Smart_Grid/Vermont%20DPS%20Smart%20Meter%20Measurement%20Report%20-%20Final.pdf

[13] Using a Gigahertz Solutions HF 35C RF meter, January 2013. They are only meant to illustrate the frequent transmission intervals of the smart meter measured

Besides the constant pulsing of smart meter emissions there is the issue of the 900 MHz frequency range used. In 1976 Lin concluded that 918 MHz energy constitutes a greater health hazard to the human brain than does 2450 MHz energy for a similar incident power density[14]. In addition studies of diathermy applications consistently show that electromagnetic energy at frequencies near and below 900 MHz is best suited for deep penetration into brain tissue.[15] So a possibility exists that in situations where people are in close proximity to an active smart meter, the combination of the frequent transmission bursts at around 900 MHz constitutes a new and unique human exposure situation that may have unintended biological effects, especially on sleep. **Appendix A** contains a number of case histories, which I have personally gathered from Victoria. Although these 10 cases are of little value scientifically they should raise a public health concern as they indicate that a possible health hazard may exist from the roll-out of smart meters. Further to these 10 Victorian cases, a 92-case study report by Melbourne medical practitioner Dr. Federica Lamech has been published in the Nov/Dec 2014 issue of the US clinical journal *Alternative Therapies in Health and Medicine*. The journal is a PubMed-listed, peer-reviewed publication. The Lamech paper, is titled "Self-Reporting of Symptom Development From Exposure to Radiofrequency Fields of Wireless Smart Meters in Victoria, Australia: A Case Series." The paper reveals that the most commonly reported symptoms from exposure to wireless smart meters were, in this order: insomnia, headaches, tinnitus, fatigue, cognitive disturbances, dysesthesias (abnormal sensation), and dizziness. The case series also revealed that the effects of these symptoms on people's lives were significant.[16] The report had already gained support from the American Academy of Environmental Medicine (AAEM) with the following public statement. "It is a well-documented 92-case series that is scientifically valid. It clearly demonstrates adverse health effects in the human population from smart meter emissions."

The AAEM stated that it is critically important to note that the data in this case series indicates that the "vast majority of cases" were not electromagnetically hypersensitive until after installation of smart meters. Dr. Lamech concluded that smart meters "may have unique characteristics that lower people's threshold for symptom development.[17]

Although the above cases are limited to Victoria, there are two other related surveys from the U.S. The first one was conducted for the EMF Safety Network in California by Dr. Ed Halteman and included 443 responses. The top health issues since smart meters installed were: sleep problems (mentioned by 49%); stress, anxiety and irritability (43%); headaches (40%); ringing in the ears (38%) and heart problems (26%).[18] The symptoms reported are consistent with those reported in the Victorian Lamech survey.

The second U.S. survey, which expanded upon the initial Halteman data, was conducted about a year later by Richard Conrad and Ed Friedman of Conrad BioLogic. A prime factor in this survey was to address the possibility of a psychosomatic response to the installation of a smart meter. They found that 42% of their over 200 respondents began

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[14] J.C. Lin, Interaction of Two Cross- Polarized Electromagnetic Waves with Mammalian Cranial Structures" IEEE Transactions on Biomedical Engineering BME-23, no. 5 (September 1976): 371-75

[15] Marko Markov, Research International, Williamsville, NY, USA & Yuri G. Grigoriev, Russian National Committee of Non-Ionizing Radiation Protection, Moscow, Russia http://www.viewdocsonline.com/document/6kn1ey

[16] F Lamech, 'Self-Reporting of Symptom Development From Exposure to Radiofrequency Fields of Wireless Smart Meters in Victoria, Australia: A Case Series', *Alternative Therapies in Health and Medicine*, Nov. 2014.

[17] AAEM, Wireless Smart Meter Case Studies, http://skyvisionsolutions.files.wordpress.com/2013/11/aaem-wireless-smart-meter-case-studies.pdf

[18] E. Halteman, Wireless Utility Impacts Survey, Final Results Summary, Sept. 13, 2011, http://emfsafetynetwork.org/wp-content/uploads/2011/09/Wireless-Utility-Meter-Safety-Impacts-Survey-Results-Final.pdf

developing symptoms before they knew a smart meter had been installed.[19] This is not to say smart meters were not responsible for new or increased symptoms in the other 58% but only that the first group was unaware of the meter installation and often unaware of the issue altogether. [20] This finding strongly indicates that in the first group the nocebo effect (more on this to follow) was highly unlikely to be a factor in these cases.

From a public health perspective, the above information clearly suggests that with the widespread rollout of smart meters we may have a significant and new public exposure situation that lies outside the thermally protective parameters of the RF standards referred to previously.

Is distance from a smart meter important?

As prolonged close[21]proximity to a smart meter, especially at night, seems to be an important factor in symptom reporting it is worthwhile to consider a survey report from Isotrope Wireless conducted on a number of residences in New York State in November 2014. In measuring internal smart meter emission levels they found levels diminished to background levels in more distant parts of the houses tested.[22] This raises the possibility that if smart meters are specifically installed well away from bedroom areas, and other areas where other people spend large amounts of time in, this may go a long way in reducing or even eliminating the reported adverse health symptoms from smart meter exposure. This could be difficult to achieve in dense housing, however, where a neighbour's smart meter may be adjacent to another home/apartment's bedroom.

What I consider an important factor with Ms. Telemzouguer case is that the smart meter was installed 150 cm from her head.

Research recommendations to determine the extent of a possible public health risk from smart meters emissions.

From a public health perspective, the suggestive evidence that smart meter RF emissions may be having an adverse health impact calls for an urgent research effort. Even if the number of affected people is small, the sheer number of people exposed represents a potentially significant public health risk. To dismiss this possibility simply as just a nocebo effect without undertaking a serious research effort is inexcusable. Even if it were eventually found that the reported adverse effects from smart meter exposure were simply the effects of worry (nocebo) the size of the numbers affected by worry should call for research specifically to address the reality, or otherwise, of their concerns. If it could be shown by specific sleep research that there was no effect on sleep patterns (the primary reported effect) that would go a long way to resolving public concerns. If, on the other hand, an effect on sleep was found and replicated, that would be another matter. For those with a vested interest in the technology this is a Pandora's Box. However, from a public health perspective this is a box that should be opened as a matter of urgency.

One way to proceed with this research is to take the "worst-case scenario"—when a bedhead is next to a smart meter on the outside of the wall—and design a study to determine if smart meter emissions affect sleep patterns. This should be done as a double-blind study through an independent sleep center with the testing facility and investigators

[19] Conrad Biologic, EXHIBIT D – Smart Meter Health Effects Survey and Report, http://www.mainecoalitiontostopsmartmeters.org/wp-content/uploads/2013/01/Exhibit-10-Smart-Meter-Health-Effects-Report-Survey2.pdf
[20] Correspondence with Ed. Friedman, 12 Jan. 2014
[21] Closeness still needs to be determined and may be dependent upon individual sensitivity.
[22] Isotrope Wireless, 'Report on Examination of Selected Sources of Electromagnetic Fields at selected residences in Hastings-on-Hudson', Nov. 23, 2013.

having no present or former financial or employment ties with an industry sector that might be affected by the findings of the study as outlined previously in the uniform requirements statement by the International Committee of Medical Journal Editors.

The researchers could set up a sleeping room with a functioning smart meter close to the bedhead on the other side of the wall so that it is not seen by the participants. As it might be difficult to set up an operating smart meter in a laboratory situation, it may be easier to use an existing residence with a bed placed by an existing smart meter that has been modified to be able to be switched on and off at random times. Smart meter emissions would be confidentially recorded throughout the study, using suitable equipment to determine if there is a correlation between sleep patterns and emissions. Recruit healthy volunteers (equal numbers of males and females) to spend a few nights sleeping in the room, while collecting electroencephalogram (EEG) data to gauge sleep and brain wave patterns, etc. The smart meter source would be switched on and off for some of the volunteers, but neither the volunteers nor the people overseeing the experiment would know whether or not the smart meter was active or not. A questionnaire would also be used to assess subjective feelings such as depression, stress, anxiety levels and tinnitus, for example. A second part of the study would call for volunteers who claim to be affected adversely by smart meter emissions to see if their symptoms correlate with the times when the meter is emitting. A provocation study could be included here to see if these subjects can sense whether or not the meter is active while they are awake.

However there are weaknesses in provocation studies when trying to evaluate the reality of EHS. This type of study simply consists of exposing subjects who have identified themselves as EHS to real and sham electromagnetic radiation (EMR) to see if they can feel when the field is turned on or off. Central to EMR provocation studies is the hypothesis that if a person is sensitive to EMR they should be able to immediately feel when the exposure is taking place. If not, it must then be a psychological problem.

A significant weakness of provocation studies when applied to possible adverse health effects of EMR exposure, however, is that by their very design, they limit the definition of EHS affected persons to those who have previously self-identified themselves as being EHS. This definition excludes the possibility that there may be people who are adversely being affected by EMR exposure (such as from a smart meter) but cannot consciously feel when they are being exposed. Such an assumption would quickly be rejected if it were applied to ionizing radiation.

Conclusion

In examining Ms. Telemzouguer's case I note that her symptoms occurred almost immediately upon her returning home from a work trip. It was only after she discovered that a smart meter was installed adjacent to her bedroom that she became convinced the emissions from the smart meter were the cause of her new illness. In my opinion this rules out a nocebo effect. However is it possible that her illness is due to some other unknown cause and she has mistakenly blamed it on the smart meter. After a number of discussions with her by phone, email and in person she does not appear to have a "sickness-worry' personality and her symptoms are similar to symptoms other people report who have apparently been adversely affected by smart meter emissions.

It is my considered opinion that Ms. Telemzouguer's present condition is most likely initially a result of her exposure to smart meter emissions from the meter being installed on her bedroom wall.

My qualifications for commenting on Ms. Telemzouguer's case

My interest in this controversy stems from my involvement in telecommunications standard setting since 1992 when I was a science writer for Aust. Democrat Senator Robert Bell. From 1998 to 2001 I was a member of the joint Standards Australia/New Zealand TE/7 Committee: Human Exposure to Electromagnetic Fields (Radiofrequency standards) which concluded in 2001. From 2000 –2008 I was a consumer representative on the Consultative committee, ELF powerline standards, run by the Australian Radiation Protection And Nuclear Safety Agency (ARPANSA).

From 2004 to 2009 I was enrolled in a PhD research program at the University of Wollongong, New South Wales. My area of research was examining the health risk assessment process as it applied to the development and maintenance of Western telecommunications standard exposure settings. In 2010 my thesis, The Procrustean Approach: Setting Exposure Standards for Telecommunications Frequency Electromagnetic Radiation, passed external review and was accepted by the university.

My thesis examines the limitations of the health protection provided by the RF standards developed under the auspices of the Institute of Electrical and Electronic Engineers (IEEE C95.1), the RF guidelines promoted by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the Australian RF radiation protection standard (2002).

The central theme of the thesis is how vested interests have managed to take effective control over many so-called expert committees for the express purpose of promoting the development of wireless technology at the expense of public health considerations. I have written a number of papers and submissions on the smart meter controversy.

Don Maisch PhD

Appendix A

Case 1: "My symptoms started the night the smart meter was installed (externally on the bedroom wall). Waking with heart palpitations and a racing heart and internal shakiness. A surging feeling that went right through my body now and then. Head pain and a burning pain on the left side of the head. Depleted immune system, leading to flu and cold. I am now getting nausea and maybe 2 -3 hours sleep a night."

Case 2: "Since installation, I wake up with headaches every single morning and go to bed with something very much like vertigo every night. I have had this ever since the smart meter was installed. It is also installed on my front porch which is right outside my bedroom, so I am very close to it."

Case 3: "Since my smart meter was installed, I have experienced shortness of breath, palpitations, and headaches mainly at the back of my head. Could it be because the position of the meter is on the other side of the wall where I sit every night while watching TV? What can I do about it? I have no room to change the position of the couch and my symptoms are getting worse by the day."

Case 4: "It is very likely that your new smart meter or your neighbour's (if their meter is close by) is affecting you. I experienced the same issues as you described from my neighbour's two smart meters located three metres from my bedroom. After complaining to Powercor, I found that they must have reconfigured them as they are not communicating as much (confirmed with an EMF meter). My heart palpitations/pain in my chest has gone but I still am waking up with headaches (although they are not as intense as before the meter was reconfigured)."

Case 5: "I have developed ringing in my ears that would go away when I went to work. Now I have had two months off work, the ringing is constant. I have developed a thyroid problem since the smart meter was installed. I wake up aching. The meter is next to my bedroom wall."!

Case 6: "Our smart meter was installed about two years ago. Our town in central Victoria was one of the earliest in the roll-out. Since its installation (outside my bedroom window), my health and the general health of my family has gone downhill rapidly…I suffer from severe headaches, memory loss, loss of motor skills. I feel as though I am walking around in a haze. I lie awake until daylight some nights, and others it is 1-2 pm when I wake up. There is also the high-pitched squeal that the smart meter emits constantly."

Case 7: "I came to Australia after a smart meter was fitted two metres below my bedroom window in NZ. I was not informed of the radiation danger. I subsequently experienced severe health problems and was at a loss to explain this. One of my students wrote a report about her own experiences with smart meters and I had to mark it. I began to put two and two together. The report probably saved me serious health problems."

Case 8: "A smart meter installed Aug 2012 unbeknown to homeowner. A high-pitched sound started that night, kept him awake. His inspection the next day found the new smart meter in his meter box. Ongoing insomnia, tinnitus and overall deterioration in health since then. Shielding has helped, but ongoing difficulty in sleep and tinnitus continues."

Case 9: "My son, aged 22, started work in a small graphic design studio in Fitzroy. After only being there a few weeks, he started to become quite unwell. He was getting severe dizziness, headaches, couldn't see straight or concentrate and was getting heart

palpitations and extreme kidney pain, so much so that he had to take several days off to recover. On returning to work, the same thing happened again and by lunchtime he had to leave. As it was a Friday, he was able to have the weekend away and started to improve." The next week, his problems recurred yet again and it was then that he discovered that there was a smart meter situated inside a wooden box only about two metres from his head. Just to rule out any other cause, he underwent medical tests – ECG, blood test and kidney scan – which all came back clear. Finding that he was only getting worse at work, he felt he had no alternative but to resign. He is now 'sensitised' to EMR and gets quite dizzy when exposed to it."

Case 10: "I've been trying to find the answers to the question of the nightmare of noise mostly at night emitting through the walls of my home , it all started when a smart meter was installed on the outside wall of our home in Sebastopol Victoria …It has taken a tremendous toll on my health as the noise is ongoing. Many people I have spoken to have the same story to tell. We also have a neighbors' smart meter facing our bedroom window. I can't say this is the answer, but its strange to think it all started with the installation of the meter. I have such a problem sleeping now I am always exhausted. I've been unable to get a response from the installers they simply do not want to reply."