

**From Bill Bruno [wbruno@gmail.com](mailto:wbruno@gmail.com)  
January 28, 2011 9:59 a.m.  
To Lora Lee Martin**

I am thoroughly convinced that non-thermal health effects exist, and I expect it is just a matter of time until scientific consensus reaches this conclusion. It has been shown that people differ in their sensitivities to electrical stimulation by at least two orders of magnitude. In light of this, people who claim negative reactions to smart meters cannot be dismissed out of hand.

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**From Bill Bruno [wbruno@gmail.com](mailto:wbruno@gmail.com)  
Feb 1, 2011 12:37 pm  
To Lora Lee Martin**

Salford's 2003 paper is excellent (Nittby et al).  
[www.ncbi.nlm.nih.gov/pubmed/12782486](http://www.ncbi.nlm.nih.gov/pubmed/12782486)

The microwave hearing work has many old papers that are fully accepted... Frey 1964 being the first.

Leitgeb's work is top quality, and shows the range of sensitivities and the correlation with people who claim sensitivity:  
<http://onlinelibrary.wiley.com/doi/10.1002/bem.20294/abstract>

The increased cancer with cell phone use, if you look at the best quality studies, is quite striking and indicates either a non-thermal effect or problems with how we calculate thermal exposures.

The DNA degradation experiments... perhaps there is room for doubt but the preponderance of evidence is that it is real and is a non-thermal effect (Singh & Lai, etc). Hutter et al.  
<http://www.ncbi.nlm.nih.gov/pubmed/16621850>

S Genuis' paper 2008 Public Health  
<http://www.ncbi.nlm.nih.gov/pubmed/17572456>

Huss on Alzheimer's from power lines (note the high voltages lines she studied almost always radiate RF due to corona discharge)  
<http://aje.oxfordjournals.org/content/169/2/167.abstract>

Once you accept the above experiments, then a lot of others that didn't seem strong enough to be convincing look quite plausible. Among them, Milham 2009  
<http://www.ncbi.nlm.nih.gov/pubmed/19748187>  
Santini's work, the Zwamborn et al TNO study, William Bise's experiments from 1978, the sleep studies (Arnetz et al among others...

<http://www.piers.org/piersonline/piers.php?volume=3&number=7&page=1148>

There is a lot more information I wish I could have given you by now, especially about switch mode power supplies (SMPSs) which are now used in all electronics including smart meters. These always radiate and cause conducted RF unless they are in a shielded enclosure with filtered power (and just adding a simple filter usually won't solve the problem completely). Plus the fact that when in receiving mode most receivers will radiate at or near the receiving frequency due to the local oscillator. This is why they don't want you to list to an FM radio on an airplane, that frequency is so close to air band the pilots use.

I suspect most of the people who complain about feeling ill or not sleeping well after a smart meter is installed are reacting not to the transmitter but either the receiver or the SMPS. These operate at different frequencies, usually 30kHz to 150kHz, but sometimes as high as 1.6MHz, and they generate lots of harmonics, both radiated and conducted ("dirty electricity"). Being in the meter, it is much harder to add a filter, and it can't be turned off or unplugged.

Bill

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**From Bill Bruno [wbruno@gmail.com](mailto:wbruno@gmail.com)  
January 18, 2011 6:32 a.m.  
To Lora Lee Martin**

Dear Lora Lee,

I had previously recommended Fig. 1. of the Smart Meter report be shown on a log scale. I'd like to make additional suggestions:

1. List the value of 0.005  $\mu\text{W} / \text{cm}^2$  as the typical urban background (FM Radio/TV)
2. Give a figure for the natural background for active and quiet sun. I can look up values if needed.

It depends on what bandwidth one wants to assume. I would suggest 800MHz-2.4GHz.

3. What would be really great would be to also depict some of the nonthermal effects,

as Magda Havas did in the San Francisco Wi-Fi report.

4. Better still, and I don't think I've seen a graph like this for these frequencies, would be to make the horizontal axis be frequency (MHz) and the vertical axis log of intensity. Then exposures and effects become points on the graph.

I've read the whole report now. There are some excellent points in it.

I will be in touch with my full response.

Best,

Bill

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**From William Bruno [billb@lanl.gov](mailto:billb@lanl.gov)**

**January 12, 2011 11:33 a.m.**

**To Lora Lee Martin**

Dear Lora,

Thanks for inviting me to email you detailed comments on the draft report.

For now just let me say that I think your resources page is great, but I am surprised there are no links to anything by Magda Havas, who you list as giving input into the report. I would recommend linking to this report she wrote on Wi-Fi, which includes a lot of interesting and relevant references:

[http://www.magdahavas.com/wordpress/wp-content/uploads/2009/10/07\\_Havas\\_WiFi-SNAFU.pdf](http://www.magdahavas.com/wordpress/wp-content/uploads/2009/10/07_Havas_WiFi-SNAFU.pdf)

By the way, I used to live in California and my wife is there right now, so I certainly hope this process leads to the best outcome for Californians.

Regards,

Bill

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