

To: Richmond City Council for November 14, 2011 City Council Meeting on Smart Meters

From: Michelle Khong

BC Hydro's claim that Smart Meters transmit signals for "only one minute a day":

- This statement continues to confuse the public, as most residents we have spoken to have been misled to assume that the transmission occurs for only one minute during the day, possibly when most people are not home. Then during the rest of the time/hours there is absolutely no radiation.
- The truth is that this "one minute" is the TOTAL of 20,000-30,000 millisecond bursts of radiating frequencies which occur every few seconds round the clock, even when people are sleeping.

BC Hydro's latest "Independent" testing which the Chief Medical Officer of Richmond referenced:

- Was conducted by a **hired, private** consulting firm called Planetworks in North Vancouver.
- The "2.3 microwatts/cm²" result they quoted was measurement of **"a two-day average"**. That means they **ignored the PEAK spiking levels which cause more harm to human cells**.
- This is like saying that one who drives a car at 200 km/hr should not be issued a speeding ticket because when "averaging" with the time that the car stops at the red light, the "average speed" is only 10 km/hr and thus there is no danger.
- Distance of collection antenna: If the collection antenna in the test is just a few metres away from the Smart Meter, the radiation level will be much lower than in reality. In real life, where both devices could be kilometers apart, the devices would be sending out stronger signals in order to connect.
- Further, there was **no mentioning of testings on multiple-meters**.
- Without multiple-meters included, the radiation level reported will not be realistic, because it leaves out radiation from transmission once every few seconds **between smart meters** within the grid.
- Also, Richmond is a city with rapid condo development. Some buildings have up to a hundred electrical metres in a small room next to residents' dwellings. Excluding the scenario of multiple **meters tightly packed together** on one wall, any test result would be completely inadequate for proper assessment.

Comparing results from the private consultant's testing to the BCCDC report:

- "Measurable levels are found by BCCDC only when the instrument probe was *in actual contact* with certain areas of the Smart Meter casing, or in close proximity to the: collector antenna." The above statement by Chief Medical Officer is inaccurate.
- According to that report, data collected away from the meter also reported readings up to 20 microwatts/cm² (0.020 milliWatts/cm²), not just *in actual contact*.
- On Page 3 of the BCCDC report, they included testing results by EPRI (Electrical Power Research Institute) in USA which was conducted also on ITRON smart meter (same as used by BC Hydro). http://www.bccdc.ca/NR/rdonlyres/43EF885D-8211-4BCF-8FA9-0B34076CE364/0/June92011_BCCDCReport_BCHydroSmartMeters.pdf
- The radiation levels reported by EPRI at 3 feet in was **11.76 to 79.3 microwatts/cm²**.
- The radiation level reported by **BC Hydro's private consultant** at 20 cm was only 2.3 microwatts/cm², **completely inconsistent** with the higher levels stated in both the EPRI test result (which was 22-26 times higher) and the BCCDC's test result (which was 8.7-22 times higher).
- Again, all these tests were conducted with **just a single meter**. When more meters are present and running, the levels will be even stronger. In California, real-life testing at apartment buildings showed

radiation over 200 microwatts/cm2. <http://www.stopsmartmetersbc.ca/html/?p=1060>

- **Declaring the meters safe for all households based on inadequate testing is hazardous.**

Is non-ionizing low-level microwave radiation harmful to health?

- Both Dr. Perry Kendall and Dr. James Lu refer to Health Canada for safety standard.
- Unfortunately, **Health Canada has the most unsafe standard** for microwave radiation in the world. Their guideline only recognizes the heating/thermal effects caused by such radiation.
- Many other governments recognize non-thermal effects caused by electromagnetic radiation and set their exposure limits to hundred or thousands of times lower than our Canadian one.
- Dr. Perry Kendall's statement is inaccurate: "given the current scientific evidence, the **consensus** of public health practitioners is that at current exposure levels these electromagnetic fields do not constitute a threat to the health of the public"
- **There is currently no consensus** in the world about this. Industry-funded studies mostly reported no adverse effects, while non-industry funded studies mostly reported adverse biological effects. Some governments who take precaution to protect citizens' health set their exposure limits to as low as 2.4 or 0.0001 microwatts/cm2, while governments like USA and Canada set obsolete and unsafe standards up to 1000 microwatts/cm2 to facilitate unrestrained expansion of wireless industries.
- This article by Dr. Andrew Goldsworthy (scientist at Imperial College, London) explains the mechanism through which human cells become damaged by low-level microwave radiation (such as Wi-Fi and Smart Meters). <http://www.emfacts.com/2011/11/dr-andrew-goldsworthy-on-wi-fi-in-schools/?mid=523>
- As in the cases of DDT, Agent Orange, asbestos, thalidomide, BPA and tobacco, **government regulation often lags** behind the actual need.
- These are testimonies by people who felt sick after Smart Meters were installed in the U.S.: http://emfsafetynetwork.org/?page_id=2292
On Oct 28, 2011, California's utilities company PG&E started offering analogue meter back to pconsumers because of severe complaints on health effects from wireless Smart Meters. <http://www.stopsmartmetersbc.ca/html/?p=1635>
- **Since Health Canada has no stringent regulation to protect citizens from microwave radiation, citizens are taking personal measures to protect themselves by saying NO to Smart Meters. We seek City Council's support to uphold this right.**

Smart Meter Collecting Antennas:

- "BC Hydro responded that for safety and security reasons, it does not disclose the location grid infrastructure."
- **Residents who are concerned about these collecting antennas should have the right to know their location. BC Hydro once again shows their lack of transparency.**

Effects on Employment

- The report by City Staff was forwarded to COPE (Canadian Office and Professional Employees Union). This was their reply after they contacted BC Hydro on the information presented: "BC Hydro said they believed the statements were true because they had been in talks with Corix about sourcing jobs from meter readers and other Hydro employees. However, it is our opinion that since there has been no formal agreement this is **not correct. We asked Hydro to contact the City to correct this view.**"

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Microwave Exposure Limits

300MHz-300GHz in $\mu\text{W}/\text{cm}^2$ (microwatts/cm²)

Canada, USA	600-1000
Radiation measured from bank of Smart Meters at Apartment Buildings	≥ 217
Radiation measured from a <u>Single</u> Smart Meter by Electrical Power Research Institute, USA	≥ 79.3
Radiation measured from a Single Smart Meter by BC Centre of Disease Control (no test for multiple-meters scenario)	≥ 50
China, Russia, Italy, France (Paris), Poland, Hungary	10
Switzerland	9.5
Switzerland Precautionary Limit for Sensitive Areas (Children, Elderly, Medically-challenged)	4.25
Belgium (Brussels, Wallonia, Flanders), Bulgaria, Luxembourg	2.4
BC Hydro's Claim on Smart Meter's Radiation (Average measurement)	2-2.3
Lichtenstein	0.1
Austria (Salzburg) Indoor-Outdoor	0.0001-0.001
Cosmic Background	< 0.00000000001

U.S. Nuclear Expert Dr. Daniel Hirsch: The cumulative radiation emitted by Smart Meters are at least 100 times more powerful than cell phone.

<http://www.citizensforsafetechnology.org/Nuclear-Expert-Daniel-Hirsch-Smart-Meters-100x-Radiation-Exposure-of-a-Cell-Phone.25.860>

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

1 W(Watt) = 1,000 mW (milliWatts) 1 W(Watt) = 1,000,000 μW (micro Watts)
 1 mW(milliWatt) = 1,000 μW (micro Watts) 1 m² = 10,000 cm² $\text{V}/\text{m} = \sqrt{\text{W}/\text{m}^2} \times 377$

Canada Safety Code 6: http://www.thermoguy.com/pdfs/Safety_Code_6.pdf

USA Federal Communications Commission (FCC):
<http://transition.fcc.gov/oet/rfsafety/rf-faqs.html>

Radiation measured from bank of Smart Meters at Apartment Buildings:
<http://www.stopsmartmetersbc.ca/html/?p=1060>

BC Centre of Disease Control Report on Radiation from a Single Smart Meter:
http://www.bccdc.ca/NR/rdonlyres/43EF885D-8211-4BCF-8FA9-0B34076CE364/0/June92011_BCCDCReport_BCHydroSmartMeters.pdf

China: http://www.salzburg.gv.at/Proceedings_%2820%29_Chiang.pdf

Russia: <http://www.tesla.ru/english/protection/standards.html>

Italy: http://www.who.int/docstore/peh-emf/EMFStandards/who-0102/Europe/Italy_files/table_datoteke/Italy_DPCM_RF_eng.pdf

France (Paris): http://www.toronto.ca/health/hphe/pdf/boh_report.pdf

Poland: http://www.who.int/docstore/peh-emf/EMFStandards/who-0102/Europe/Poland_files/table_datoteke/poljski1883.pdf

Hungary: http://www.salzburg.gv.at/Proceedings_%2815%29_Sage_2.pdf

Switzerland: <http://www.bafu.admin.ch/elektromog/01100/01101/index.html?lang=de>

Regional Ordinances in Brussels (2007), Wallonia (2009), Flanders (2010)
http://www.who.int/peh-emf/project/mapnatreps/BELGIUM_EMF_report_2008_2009.pdf

Bulgaria: http://www.who.int/docstore/peh-emf/EMFStandards/who-0102/Europe/Bulgaria_files/table_bu.htm

Luxembourg: http://www.next-up.org/pdf/Dr_Jean_Pilette_ANTENNES_DE_TELEPHONIE_MOBILE_TECHNOLOGIES_SANS_FIL_ET_SANTE_version112008.pdf

BC Hydro's Claim on Smart Meter's Radiation
http://www.bchydro.com/energy_in_bc/projects/smart_metering_infrastructure_program/faqs/radio_frequency.html

Health Department of the Federal State of Salzburg (Austria 2002)
http://www.salzburg.gv.at/konfliktmanagement_salzburger_modell.pdf

Lichtenstein:
<http://next-up.org/pdf/LichtensteinNr199jahrgand2008.pdf>

BC Centre of Disease Control Report on Smart Meter Testing

3. Study of Smart Meter EMF Emission by EPRI:

The Electrical Power Research Institute (EPRI, USA) conducted an extensive study on the RF emission of Smart Meters [Ref.3] and found that the exposure levels were significantly below the applicable Exposure Limits during continuous mode (duty cycle = 100%).

Considering that Smart Meters emit only few minutes per day, the daily exposure of an individual standing within a short distance of the Smart Meter would be much lower.

An example of EPRI survey results is shown in Table 2.

Table 2. EPRI Survey Data (Percentage of Public exposure Limit)

Summary of planar area scans performed with the SRM-3006 in front of residential meter installation at residence A, Downey, CA, with transmitters operating continuously.

Location relative to meter (feet)	900 MHz RF LAN ^(b)			2.4 GHz Zigbee ^(c)		
	RF field (% public MPE) ^(d)	Time of measurement (PDT)	RF field (% public MPE)	Time of measurement (PDT)		
Surface	58 9.67	9:49	79.3 7.93	11:19		
30 cm	52.5 0.875	9:54	61.5 0.615	11:22		
60.96 cm	21.67 0.361	9:56	25.8 0.258	11:22		
91.44 cm	11.16 0.186	9:58	14.2 0.142	11:23		
152.4 cm	5.76 0.096	10:00	7.1 0.071	11:25		

^(b) LAN: Local Area Network
^(c) Zigbee: A data protocol used by the Home Area Network (HAN)
^(d) MPE: Maximum Permissible Exposure

The measurement of RF Power Density is illustrated in the following picture (Figure 1).



$\mu\text{W}/\text{cm}^2 =$
microwatts per cm^2

Figure 1 - Technician Measuring the RF power density from a Smart Meter