

Radio Frequencies from Toronto Water Meters

Summary of the Issue

In the spring of 2010, Toronto Water began the installation phase of the residential water meter program. The water meters record water use in homes. Participation in the program is mandatory under Municipal Code 851 – Water Supply. The water meters are equipped with wireless transmitters installed in or outside the home that periodically send meter readings to data collector/radio receiver units located across the city.

Some residents have requested information on the potential health impact from exposure to the radiofrequencies (RFs) used to send meter readings to Toronto Water.

Regulation of RF Emitting Devices

Industry Canada, a branch of the federal government, is responsible for the approval of RF-emitting devices as well as the implementation/enforcement of Safety Code 6, Health Canada's guideline for exposure to RFs. Safety Code 6 establishes safety limits for human exposure to RF energy.

In 2012, Toronto Public Health (TPH) was asked by Toronto Water to review information on RF levels from the water meter transmitters and respond to public inquiries related to health. TPH looked at RF levels from various sources and compared them to the City of Toronto (the City)'s [policy of prudent avoidance](#). This policy applies to new cell phone towers and requests that RF levels be limited to 1% of Safety Code 6 values for the general public.

Assessing RF Exposures from Water Meters

TPH has reviewed available literature and product information from the water meter manufacturer. Toronto Water meters are different from *smart* meters because they do not receive data and do not create a communication network with other residential meters. The water meters collect the data then transmit it directly to a radio receiver unit at various non-residential locations throughout the city. RFs are emitting from the units only during data transmission. Data transmission occurs four times a day and each transmission period lasts 0.25 seconds. Therefore, the total transmission time is one second per day. Based on the information provided in the manufacturer's document, the meters would transmit RFs at 0.0143% of Health Canada's Safety Code 6 guidelines, a value well below 1% thereby meeting the City's prudent avoidance policy as outlined above.

Sources of Radiofrequency Electromagnetic Fields

The Table below puts the RFs from water meters into context when considering individual exposure to RFs in the home or in the community.

<u>Source</u>	<u>Frequency</u>	<u>Exposure Level (mW/cm²)</u>	<u>Distance</u>	<u>Time</u>	<u>Spatial Features</u>
Cell Phone	900 MHz, 1800 MHz	1-5	At ear	During call	Highly localized
Microwave oven	2450 MHz	~50 0.05-0.2	2 inches 2 feet	During use	Localized, non-uniform
Local area networks (WiFi)	2.4-5GHz	0.0002-0.001 (wireless router)	3 feet	Constant when nearby	Localized, non-uniform
Smart Meters	900 MHz, 2400 MHz	0.002-0.0002	3-10 feet	When in proximity during transmission	Localized, non-uniform
Water Meters (TO)	450 -470 MHz	0.000043	20 cm	When in proximity, during transmission	Localized, non-uniform

Sources: Adapted from

- **Radiofrequency Electromagnetic Fields: evaluation of cancer hazards** (Powerpoint). Baan, et al. 2011 on behalf of the WHO International Agency for Research on Cancer Monograph Working Group. http://monographs.iarc.fr/ENG/Publications/REF_Posters2012.ppt.
- Aclara's Position on Radio Frequency Exposure and the STAR Network, prepared by Aclara Technologies LLC

Conclusion:

Based on the review of available information, Toronto Public Health concludes that the RF levels from water meters meet the City's prudent avoidance policy. It is unlikely that RFs from the water meters would pose a health hazard to those who reside in the homes or neighbourhoods where they are installed.

For more information, please contact Environmental Response Team (ERT), Healthy Environments: 416-392-7685

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