

## RF Health Effects of Low Levels of Radio Frequency

The growth of Smart Metering has been accompanied by negative reactions by some consumers and special interest groups due to concerns of health effects of RF, privacy of data, and accuracy of meters. While utilities and Public Utility Commissions have generally been able to rationally deal with these issues through the use of scientific studies and data with the consumer (and, in some cases, providing an opt-out for concerned consumers), there has been a great deal of misinformation and emotion.

With over 50 years of scientific study, there is no definitive or proven biological effects from human exposure to low level RF signals. Very high levels of RF energy in close proximity to a human can cause tissue heating and potential burns, but that situation does not apply to Smart Meters nor to typical household devices.

A number of credible scientific studies that address the question of Health Effects from low levels of RF are attached. Some deal with cell phones in close proximity to the head while others are more general but all are inconclusive in their findings.

Caution is required regarding some concerned consumers claims about research being suppressed, and when individual studies are cited as contrary evidence. Some of these studies may not follow good scientific research guidelines or selected statements might be taken out of context. For example, there is a World Health Organization study that states *all* radio signals should be classified as a "class 2B carcinogen." However, the report also states that 2B is the lowest classification, referring to something that *might possibly* have a link to cancer. The same report also includes pickled vegetables and coffee on the class 2B list

Note that AMR/AMI devices also are significantly different from many consumer devices such as cell phones, WiFi routers, and microwave ovens:

- RF power levels of AMR/AMI devices are very low
- Transmit times are extremely short (less than one second) and occur only occasionally throughout the day. Total transmission time is less than one minute per day.
- Human proximity to the devices is limited, with these devices being typically installed in a basement or outside, compared to a cell phone in contact with the user's head

Badger Meter's AMR/AMI devices, as well as all wireless communications devices that are sold in the US are required to meet minimum guidelines for safe human exposure to radio frequency energy. In addition, federal health and safety agencies including the EPA, FDA, National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) consistently monitor and regulate RF safety. Badger Meter's products are carefully evaluated and meet all exposure limits and standards specified by these agencies.



Health Impacts of Radio Frequency Exposure from Smart Meters

California Council on Science and Technology

<http://www.ccst.us/publications/2011/2011smart-final.pdf>

A Perspective on Radio-Frequency Exposure Associated With Residential Automatic Meter Reading Technology

Electric Power Research Institute

<http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=00000000001020798>

No Evidence Linking Cell Phone Use to Risk of Brain Tumors

US Food and Drug Administration

<http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm212273.htm>

Health Canada: Smart Meters do not pose a public health risk

<http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/meters-compteurs-eng.php>

Cell Phones

American Cancer Society

<http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/cellular-phones>

No evidence of adverse health effects of smart meters

Maine CDC

<http://www.metering.com/No/evidence/adverse/health/effects/smart/meters/Maine/health/director/reports>

Report on Health and Radiofrequency Electromagnetic Fields from Advanced Meters

Public Utility Commission of Texas

[http://www.puc.texas.gov/industry/electric/reports/smartmeter/SmartMeter\\_RF\\_EMF\\_Health\\_12-14-2012.pdf](http://www.puc.texas.gov/industry/electric/reports/smartmeter/SmartMeter_RF_EMF_Health_12-14-2012.pdf)

No Health Threat From Smart Meters

Utilities Telecom Council

<http://www.utc.org/no-health-threat-smart-meters>