



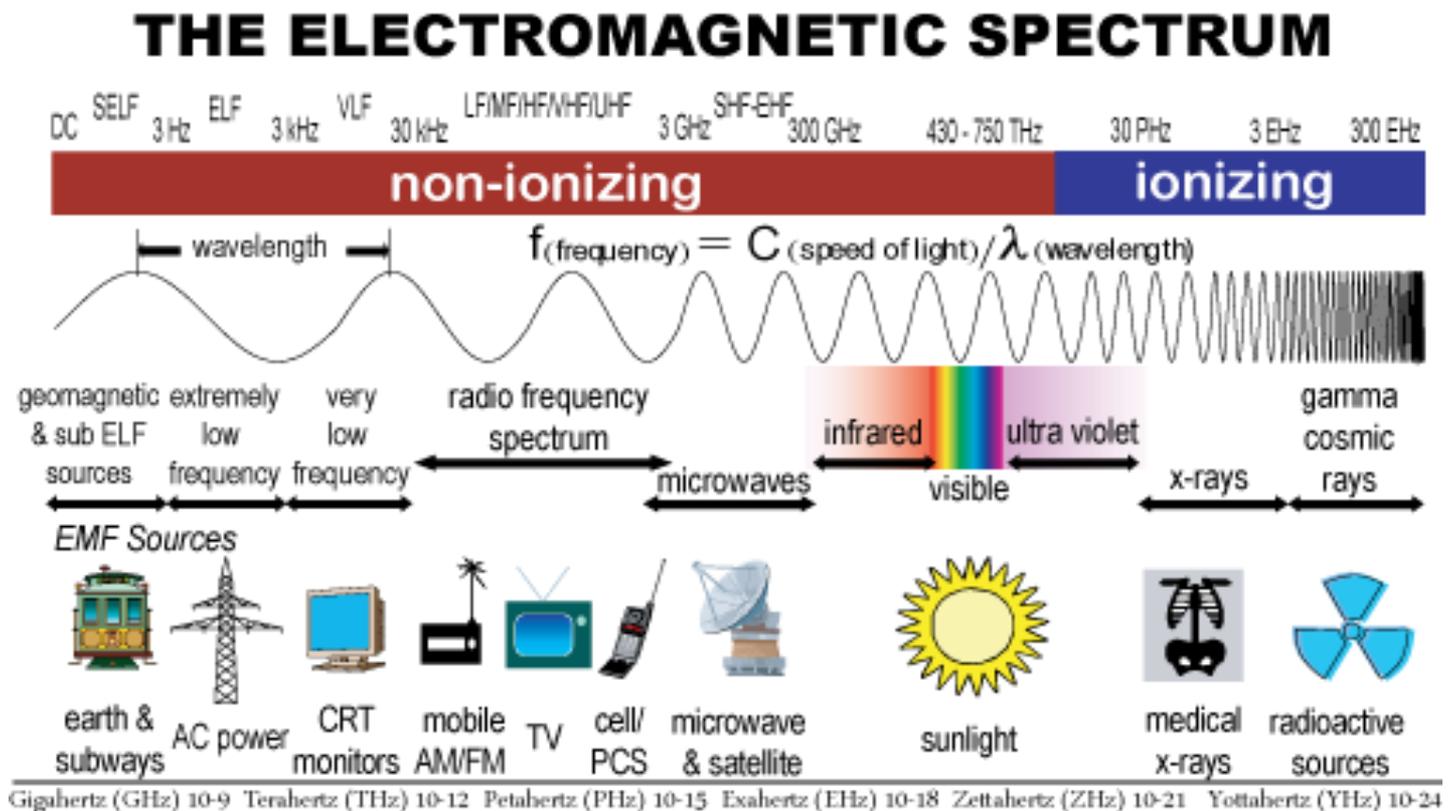
Health Canada Roles and Responsibilities - Electromagnetic Fields (EMFs) and Safety Code 6

Pascale Bellier
Research Biologist
Environmental and Radiation Health Sciences Directorate
June 2012



The Electromagnetic Spectrum

- The electromagnetic spectrum is the range of all possible frequencies of electromagnetic radiation



Health Canada Responsibilities

- Health Canada
 - develops human exposure limits for the protection of the general public, and workers, from EMF (Safety Code 6);
 - conducts laboratory studies, monitors and reviews external research on the potential health effects associated with exposure to EMFs; and
 - advises government departments and agencies and the general public on health aspects regarding EMF exposure.



Health Canada's RF exposure guidelines

Safety Code 6



Health Canada
Santé Canada

Your health and safety... our priority.

Votre santé et votre sécurité... notre priorité.



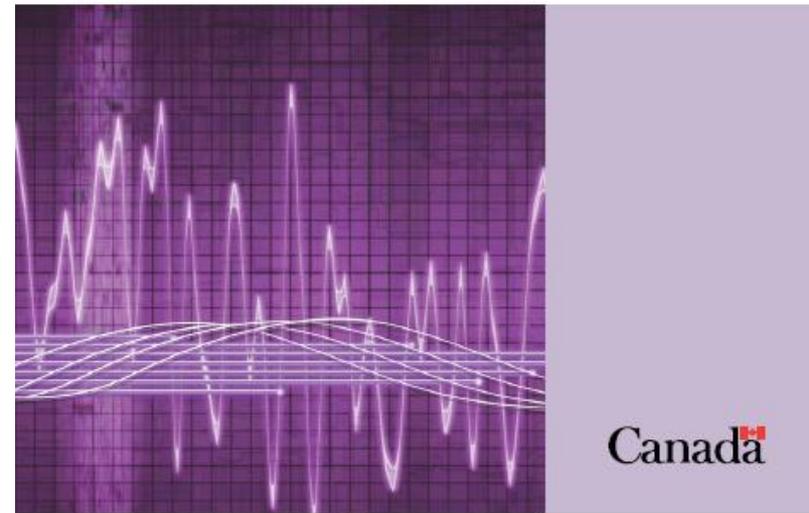
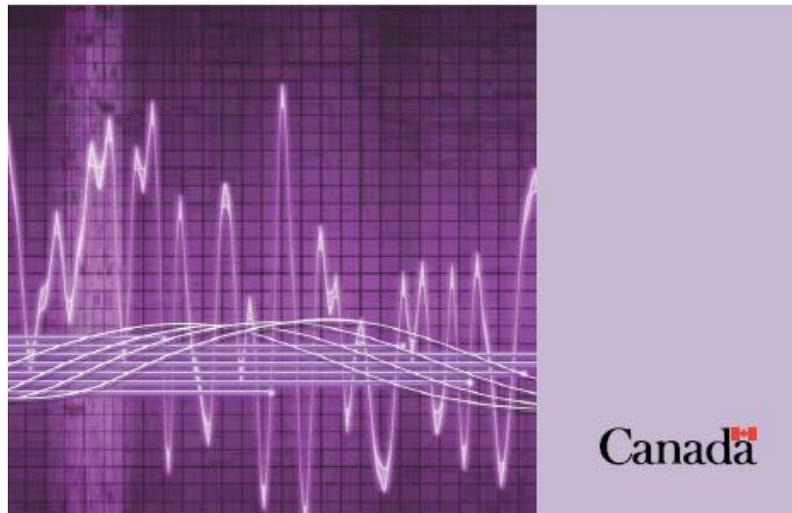
Santé Canada
Health Canada

Votre santé et votre sécurité... notre priorité.

Your health and safety... our priority.

Limits of Human Exposure
to Radiofrequency Electromagnetic
Energy in the Frequency Range
from 3 kHz to 300 GHz

Limites d'exposition humaine
à l'énergie électromagnétique
radioélectrique dans la gamme
de fréquences de 3 kHz à 300 GHz



Safety Code 6

Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz

- One of a series of documents to set out practices for radiation protection from exposure to radiation emitting devices.
- First published in 1979. Revised in 1991, 1999 and 2009. Next review is currently underway and scheduled for completion in early 2013.
- Establishes safety limits for human exposure to radiofrequency (RF) energy in the frequency range from 3 kHz to 300 GHz.
- Adopted in part by Industry Canada for radiocommunication licensing and operational requirements.
- The current version of the Code is accompanied by the *Technical Guide for Interpretation and Compliance Assessment of RF Exposure Guidelines*.
- Electronic copies available upon request (contact: publications@hc-sc.gc.ca).



How was Safety Code 6 developed?

- **Health Canada scientists have evaluated the results of scientific studies conducted over the past 50 years on the possible health effects of RF energy.**
 - All peer-reviewed scientific studies were considered.
 - Studies are assessed for their scientific quality and a weight-of-evidence approach is used when evaluating the data.
 - Thresholds for adverse health effects in humans were identified - safety factors were incorporated into the public exposure limits, to account for vulnerable populations.
 - An expert committee of the Royal Society of Canada provides external expert advice on the limits recommended in Safety Code 6.



Safety Code 6 Limits

Thermal and Non-thermal Effects

- Exposure limits in Safety Code 6 are based on **all established biological effects** – this includes thermal and non-thermal effects.
- For the lower frequency range, from 3 kHz to 100 kHz, the biological end point on which the limits are based is nerve and muscle stimulation. These are acute effects and are non-thermal in nature.
- At higher frequencies, non-thermal effects are not well established and currently do not form a scientifically acceptable basis for restricting human exposure to RF energy.
- Safety Code 6 limits are considered to be well below the threshold for any potential harm.



What about the IARC classification of RF energy as “possibly carcinogenic” to humans?

- The International Agency for Research on Cancer (IARC) classified RF energy as “possibly carcinogenic” to humans (Class 2B).
- The IARC classification reflects the fact that limited evidence exists.
- The vast majority of scientific research to date does not support a link between RF energy exposure and human cancers.
- Much of the data used to support the IARC designation came from studies of brain cancer incidence in long-term/heavy cell phone users.
- At present, the evidence of a possible link between RF energy exposure and cancer risk is far from conclusive and more research is needed to clarify.
- Health Canada is in agreement with both the World Health Organization (WHO) and the IARC that additional research examining long-term, heavy use of cell phones is warranted.



IARC and RF Exposure

Cell Phones vs. Cell Towers

- Health Canada has recently updated its advice pertaining to **cell phone use**
 - not to RF energy exposures from cell towers or other wireless devices.
- Intensity and distribution of RF energy absorbed within the body from cell towers are very different from that of cell phone use.
- **cell phones** - relatively high RF energy exposure levels occur in a **localized** area of the head
- **cell towers** - RF energy exposure is not localized to one part of the body, but rather, the energy is absorbed at very low levels across the **entire body** (much like exposure to AM/FM radio signals).
- Health Canada does not consider additional precautionary measures for other wireless devices, such as cell phone towers and Wi-Fi equipment, to be warranted.



Conclusion

Health Canada and the international scientific community are in agreement that exposure to RF energy below guideline levels does not pose a risk to human health.

Precautions to limit exposure to RF energy from cell phone towers are unnecessary because exposure levels are typically well below those specified in health-based exposure standards.

Health Canada continues to monitor the science regarding RF exposure and would take action if future research establishes that RF energy exposure poses a health risk to Canadians.



Looking for Additional Information?

- For more information on Cell Phone Towers, please visit the Health Canada webpage ***It's Your Health*** at:
http://www.hc-sc.gc.ca/hl-vs/alt_formats/pacrb-dgapcr/pdf/iyh-vsv/prod/cell-eng.pdf
- For further information, please visit the Health Canada ***Environmental and Workplace Health*** webpage at:
<http://www.hc-sc.gc.ca/ewh-semt/radiation/cons/stations/index-eng.php>

