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Safety of Wi-Fi Equipment

Updated:

October 2011

IT'S YOUR HEALTH

Safety of Wi-Fi Equipment

THE ISSUE



Wi-Fi equipment is being installed in many public places across Canada including schools, offices, libraries, shopping venues and coffee shops. Some people are concerned that radiation from Wi-Fi equipment could cause health problems and that children may be at particular risk in school environments.

WI-FI EQUIPMENT

Wi-Fi is a technology that allows devices such as home and portable computers, digital audio players and video game consoles to communicate data wirelessly. It is often used to link home computers to the internet. Wi-Fi is the second most common form of wireless technology, next to [cell phones](#). Like other commonly used household products (cordless phones, Bluetooth devices, and remote controls for garage door openers), Wi-Fi equipment emits [radiofrequency \(RF\) energy](#).

The RF energy given off by Wi-Fi is a type of non-ionizing radiation. Unlike ionizing radiation (as emitted by [X-ray machines](#)), RF energy from Wi-Fi equipment and other wireless devices cannot break chemical bonds. While some of the RF energy emitted by Wi-Fi is absorbed in your body, the amount largely depends on how close your body is to a Wi-Fi enabled device and the strength of the signal. Unlike cellular phones where the transmitter is in close proximity

to the head and much of the RF energy that is absorbed is deposited in a highly localized area, RF energy from Wi-Fi devices is typically transmitted at a much greater distance from the human body. This results in very low average RF energy absorption levels in all parts of the body, much like exposure to AM/FM radio signals.

HEALTH RISKS OF WI-FI

In 2011, the [International Agency for Research on Cancer \(IARC\)](#) classified RF energy as “possibly carcinogenic to humans”. The IARC classification of RF energy reflects the fact that some limited evidence exists that RF energy might be a risk factor for cancer. However, the vast majority of scientific research to date does not support a link between RF energy exposure and human cancers. 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 this “possible” link. Health Canada is in agreement with both the World Health Organization and IARC that additional research in this area is warranted.

As long as RF energy levels remain below Health Canada’s RF safety guidelines, current scientific evidence supports the assertion that RF energy emissions from Wi-Fi devices are not harmful. Health Canada’s conclusions are consistent with the findings of other international bodies

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and regulators, including the [World Health Organization](#), the [International Commission on Non-Ionizing Radiation Protection](#), the [Institute of Electrical and Electronics Engineers](#) and the [U.K. Health Protection Agency](#).



RF energy exposure from Wi-Fi equipment in all areas accessible to the general public are required to meet Health Canada's safety guidelines. The limits specified in the guidelines are far below the threshold for adverse health effects and are based on an ongoing review of thousands of published scientific studies on the health impacts of RF energy. The public exposure limits apply to everyone, including children, and allow for continuous, 24/7 exposure.

MINIMIZING YOUR RISK

Health Canada's position is that no precautionary measures are needed, since RF energy exposure levels from Wi-Fi are typically well below Canadian and international safety limits. As with any product, Wi-Fi devices should be operated in accordance with the manufacturer's instructions.

THE GOVERNMENT OF CANADA'S ROLE

Health Canada's role is to protect the health of Canadians, so it is the Department's responsibility to research and investigate any possible health effects associated with exposure to RF energy, such as that coming from Wi-Fi equipment. Health Canada has developed guidelines for safe human exposure to RF energy ([Safety Code 6](#)). It is one of a series of codes that specify the requirements for the safe use of radiation-emitting devices operating in the frequency range from 3 kilohertz (kHz) to 300 gigahertz (GHz). Wi-Fi operates in the 2.4 and 5.8 GHz frequency range.



[Industry Canada](#), the federal regulator responsible for the approval of RF communications equipment and performing compliance assessments, has chosen Health Canada's RF guidelines as its exposure standard. As long as exposures respect these guidelines, Health Canada has determined that there is no scientific reason to consider Wi-Fi equipment dangerous to the public.

FOR MORE INFORMATION

- Health Canada [Wi-Fi YouTube video](#): www.hc-sc.gc.ca/ahc-asc/media/video/wifi-eng.php

- [Frequently Asked Questions About Wi-Fi](#): www.hc-sc.gc.ca/ewh-semt/radiation/cons/wifi/faq-eng.php
- Health Canada, [Cell Phone Towers](#) at: www.hc-sc.gc.ca/ewh-semt/radiation/cons/stations/index-eng.php
- *It's Your Health*, [Safety of Cell Phones and Cell Phone Towers](#) at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/cell-eng.php
- *It's Your Health*, [Electric and Magnetic Fields at Extremely Low Frequencies](#) at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/environ/magnet-eng.php
- World Health Organization, [Electromagnetic fields and public health: mobile phones](#) at: www.who.int/mediacentre/factsheets/fs193/en/
- World Health Organization, [Electromagnetic fields and public health: base stations and wireless technologies](#) at : www.who.int/mediacentre/factsheets/fs304/en/index.html
- International Agency for Research on Cancer [electromagnetic fields news release](#) at: www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf

FOR INDUSTRY AND PROFESSIONALS

- Health Canada's [Consumer and Clinical Radiation Protection Bureau](#) at: www.hc-sc.gc.ca/ahc-asc/branch-dirgen/hecs-dgsec/psp-ppsp/ccrpb-bpcrcc-eng.php
- Health Canada's [RF exposure guidelines \(Safety Code 6\)](#) at: www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct-eng.php
- Industry Canada's [Radio Standards Specification 102](#) at: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01904.html



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- Industry Canada's [Client Procedures Circular CPC-2-0-03](http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08777.html) at: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08777.html
- Industry Canada, Consumer Trends Update – [The Expansion of Cell Phone Services](http://www.ic.gc.ca/eic/site/oqa-bc.nsf/eng/ca02267.html) at: www.ic.gc.ca/eic/site/oqa-bc.nsf/eng/ca02267.html
- Industry Canada's [Guidelines for the Protection of the General Public in Compliance with Safety Code 6](http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf05990.html) at: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf05990.html
- World Health Organization, [Electromagnetic Fields](http://www.who.int/topics/electromagnetic_fields/en/) at: www.who.int/topics/electromagnetic_fields/en/

RELATED RESOURCES

- For safety information about food, health and consumer products, visit the [Healthy Canadians](http://www.healthycanadians.gc.ca) website at: www.healthycanadians.gc.ca
- For more articles on health and safety issues go to the [It's Your Health](http://www.health.gc.ca/iyh) web section at: www.health.gc.ca/iyh

You can also call toll free at 1-866-225-0709 or TTY at 1-800-267-1245*

Updated: October 2011
Original: December 2010

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Catalogue: H13-7/86-2011E-PDF
ISBN: 978-1-100-19449-3

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