



## WiFi in Schools, Electromagnetic Fields and Cell Phones Alberta Health Fact Sheet

### Introduction: WiFi in Schools

Wireless devices and the networks that support them are becoming more common in Alberta schools. WiFi is a wireless networking technology that allows computers and other devices to communicate over a wireless signal. Typically the signal is carried by radio waves over an area of up to 100 meters. Through the implementation of a WiFi network, school jurisdictions are able to offer teachers and students greater flexibility in accessing and using online learning resources, allowing students to use technology outside of the computer lab and integrate technology into day-to-day learning.

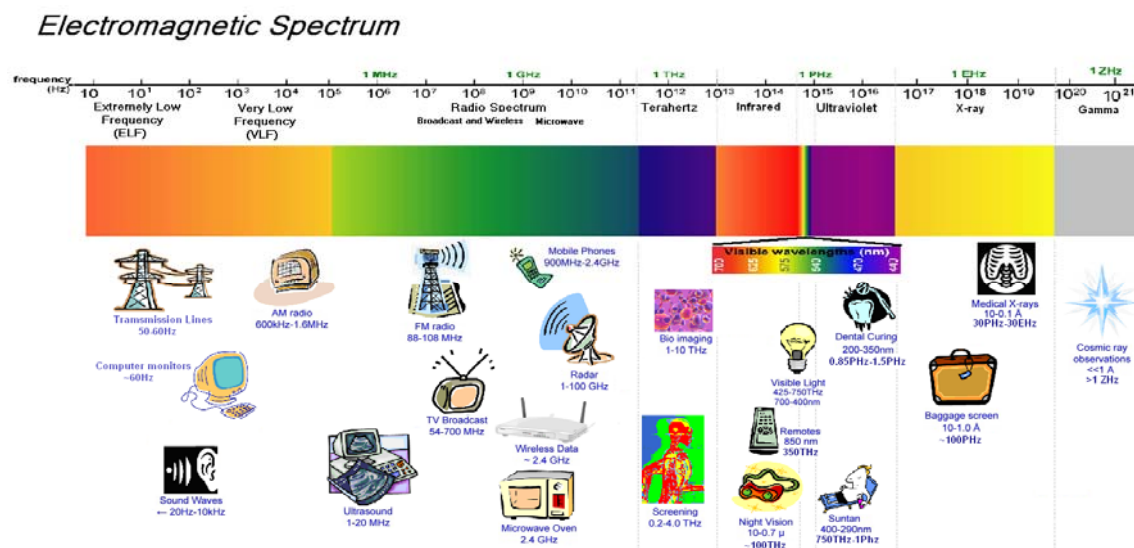
Since the 1970s, there have been public concerns about electromagnetic radiation and more recently this has included WiFi in schools. As a response to these concerns, the World Health Organization (WHO) is conducting research on health repercussions of Extremely Low-Frequency (ELF) electromagnetic radiation, including an electromagnetic field (EMF) research project involving countries from around the world. After reviewing thousands of studies, WHO concluded that there is no conclusive evidence that WiFi exposure adversely affects human health.

This fact sheet discusses information on electromagnetic fields, ELF electromagnetic radiation, regulations, and what research says about WiFi and health effects.

### What are Electromagnetic Fields?

Electromagnetic fields (EMF), or fields of electromagnetic radiation, can occur naturally or can be produced artificially. EMF is the general term used to refer to radiofrequency (RF) and extremely low-frequency (ELF) radiation. All electrical and electronic devices, including appliances, residential wiring and power lines produce ELF. Household devices that emit ELF radiation include phones, computers, laptops and lights. Devices that communicate with each other wirelessly, including cellular phones and wireless local area networks, use radiofrequency (RF) signals to communicate, in addition to generating ELF radiation.

The diagram below shows the electromagnetic spectrum and where some common sources of electromagnetic radiation fall on that spectrum.



### **Who regulates the RF Fields in Canada?**

To protect the public from any possible health effects associated with exposure to radiofrequency (RF) energy, Health Canada has developed guidelines for safe human exposure to RF energy. The current version of these exposure guidelines is specified in a document called: [Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz - Safety Code 6 \(2009\)](#). The limits specified in these guidelines are based on an ongoing review of published scientific studies on the health impacts of RF energy. Using data from these studies, Health Canada set the general public exposure limits at least 10 times lower than the threshold for potentially adverse health effects.

### **What does the research on WiFi's effect on health say?**

The consensus of the scientific community is that RF radiation exposure from WiFi is too low to cause adverse health effects in humans. RF exposure from WiFi equipment is far below Health Canada's and international exposure limits and does not pose a risk to public health, including school children.

### **What does the research say about cell phones and health?**

The amount of RF energy you absorb from cell phone use depends on many factors, such as how close you hold the cell phone to your body and the strength of the signal. Cell phones are designed to operate at the minimum power necessary to connect and maintain a quality call. Cell phones send and receive radio signals from a network of fixed, low-power, cell phone towers (or base stations). These towers are often located on rooftops, towers and utility poles. The transmitting power of a cell phone varies, depending on the type of network and its distance from the cell phone tower. The power generally increases the further you move away from the nearest cell phone tower.

In 2011, the International Agency for Research on Cancer (IARC) classified RF energy as "possibly carcinogenic to humans". The IARC classification of RF energy does not establish that RF energy is a risk factor for cancer but reflects that some limited data exist suggesting the possibility that a risk might exist. These data came primarily from studies on cell phone users. Other agents classified by IARC as "possibly carcinogenic to humans" include talc-based body products, coffee, and pickled vegetables, among others.

As evidenced by IARC's classification, the vast majority of scientific research to date does not support a conclusive link between RF energy exposure and human cancers. At present, the evidence of a possible link between RF energy exposure and cancer risk is not supported by the scientific literature. Health Canada is in agreement with both the World Health Organization and IARC that additional research in this area is warranted. While both cell phones and WiFi use RF radiation, the magnitude of exposure to RF radiation from cell phone use is hundreds of times greater than RF radiation exposure from WiFi.

Based upon the uncertainty surrounding a possible long-term risk of cancer, Health Canada updated its advice pertaining to cell phone use, describing practical ways of reducing exposure to radiofrequency (RF) energy from these devices.

### **What does Alberta's Chief Medical Officer of Health say?**

Based on currently available scientific evidence (August 2012), it is the view of the Chief Medical Officer of Health that the use of WiFi in schools does not pose a health risk to staff or students. The Office of the Chief Medical Officer of Health will continue to monitor the science and consider new information as it becomes available.