

Wireless Networks and Safety

Fact Sheet

Wireless Networks in Schools

Wireless devices and the networks that support them are becoming more common in Alberta schools. Through the implementation of wireless networks school jurisdictions are able to offer teachers and students greater flexibility in accessing and using online learning resource, allowing students to use technology outside of the computer lab and integrate technology into day-to-day learning.

However, wireless networks rely on electromagnetic fields to transmit information to and from wireless devices. This has raised some concern about the safety of wireless networks in Alberta schools. The following information has been prepared to help school jurisdictions in developing their own policies on wireless network safety.

What are Electromagnetic Fields?

Electromagnetic fields, or fields of electromagnetic radiation, are produced by devices in our environment. There are two types of electromagnetic radiation.

- All electrical and electronic devices, including appliances, residential wiring, and power lines produce extremely low-frequency (ELF) electromagnetic radiation. 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. In addition to

ELF radiation, these devices also produce RF radiation.

The more general term “Electromagnetic Field” (EMF) is used to refer to both types of radiation, RF and ELF, together. EMF radiation is what is known as “non-ionizing radiation.” It is in a different category from ionizing radiation (including X-rays and gamma rays), which has undisputed, detrimental health effects.

Since the 1970s, concerns have arisen over the levels of EMF radiation that humans are exposed to, both in our environments and as a result of the use of particular technological devices. Considerable research has been done in this area, but the results of this research are mixed. Several studies have found results suggesting a relationship between adverse health effects and exposure to EMF radiation. While some research asserts that EMF radiation presents a negative health risk, many other studies have concluded that there is no causal link between the two factors.

ELF Radiation

The World Health Organization (WHO) has conducted research into the health repercussions of ELF radiation. The WHO Task Group concludes in Fact Sheet #322, “Electromagnetic Fields and Public Health” (June 2007), that “there are no substantive health issues related to ELF electric fields at levels generally encountered by members of the public.” The WHO also notes that based on present evidence, it considers the evidence of health dangers insufficient to warrant changing international EMF exposure limits. However, it also recommends ongoing research and monitoring to reduce uncertainty around the effects of EMF on health.

RF Fields and Safety Code 6

In Canada, all sources that produce RF fields, including radio and television broadcasting, cellular phones, and radar, are regulated by Industry Canada. Industry Canada uses a Health Canada standard known as Safety Code 6 to regulate these sources. Exposure to RF energy in excess of the Safety Code 6 levels can cause negative health effects, primarily consisting of an increase in body temperature. However, Safety Code 6 sets levels "at least a factor of 10 lower than the threshold where potentially harmful effects begin, as judged by a consensus of the scientific community". As such, Safety Code 6 sets standards that are very stringent, setting maximum levels for radiation that are far lower than what researchers believe to be harmful.

The WHO has also conducted research into the health repercussions of RF. WHO Fact Sheet

#304, "Electromagnetic Fields and Public Health: Base Stations and Wireless Technologies," published in May 2006 concludes that "considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects."

EMF Radiation Safety and Alberta Schools

Providing safe environments for learning is an ongoing priority for Alberta Education. Organizations like Health Canada and the World Health Organization will continue to monitor emerging research on the safety of EMF radiation and revise standards as appropriate. Alberta Education will continue to use these organizations' standards as accepted parameters for technology development in schools.

For more information:

Health Canada. "Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 KHZ to 300 GHZ - Safety Code 6." http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/99ehd-dhm237/index_e.html

World Health Organization. "Electromagnetic fields and public health: Exposure to extremely low frequency fields [Fact sheet #322]." <http://www.who.int/mediacentre/factsheets/fs322/en/index.html>

World Health Organization. "Electromagnetic fields and public health: Base stations and wireless technologies [Fact sheet #304]." <http://www.who.int/mediacentre/factsheets/fs304/en/index.html>