

Appendix 7 – Health Canada Information on Smart Meters Government of Canada Website

About Smart Meters

Smart meters are relatively new wireless devices that transmit information using radio frequency (RF) signals to let utility companies know how much water, gas, or electricity a household or business is using. The signals emitted by smart meters are of relatively low power, similar to cell phones and Wi-Fi equipment. The maximum amount of power that a smart meter device can transmit must comply with Innovation Science and Economic Development Canada - Radio Frequency Exposure Compliance of Radiocommunication Apparatus.

Health Risks

As with any wireless device, some of the RF energy emitted by smart meters will be absorbed by anyone who is nearby. The amount of energy absorbed depends largely on how close your body is to a smart meter. Unlike cellular phones, where the transmitter is held close to the head and much of the RF energy that is absorbed is localized to one specific area, RF energy from smart meters is typically transmitted at a much greater distance from the human body. This results in very low RF exposure levels across the entire body, much like exposure to AM or FM radio broadcast signals.

Survey results have shown that smart meters transmit data in short bursts, and when not transmitting data, the smart meter does not emit RF energy. Furthermore, indoor and outdoor survey measurements of RF energy from smart meters during transmission bursts were found to be far below the human exposure limits specified in Health Canada's Safety Code 6.

Based on this information, Health Canada has concluded that exposure to RF energy from smart meters does not pose a public health risk.

Minimizing Your Exposure

Since RF energy exposure levels are far below Canadian and international safety limits, Health Canada does not consider that any precautionary measures are needed to reduce RF energy exposure from smart meters.

In cases where multiple smart meters are installed together, as in some townhouses or high-rise buildings, the total exposure levels from multiple smart meters will still be far below Health Canada's RF energy exposure limits, due to the infrequent nature of transmissions.

The Government of Canada's Role

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.

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 exposure limits far below the threshold for potentially adverse health effects.

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

Reference:

<https://www.canada.ca/en/health-canada/services/health-risks-safety/radiation/everyday-things-emit-radiation/smart-meters.html>

About Safety Code 6

Safety Code 6 is a document that sets out recommended safety limits for human exposure to radiofrequency electromagnetic fields (EMF) in the frequency range from 3 kHz to 300 GHz.

This range covers the frequencies used by communications devices and equipment that emit radiofrequency EMF such as:

- Wi-Fi
- cell phones
- smart meters
- those using 5G technology

The safety limits in the code:

- are not device specific
- protect against all established adverse health effects related to radiofrequency EMF, no matter the source
- incorporate large safety margins to provide a significant level of protection for all Canadians, including those working near RF sources
- provide protection for people of all ages and sizes, from exposure to all forms of radiofrequency EMF on a continuous (24 hours a day/7 days a week) basis

The exposure limits in Safety Code 6 are based on:

- Health Canada research
- an ongoing review of published scientific studies on potential adverse health effects

Safety Code 6 is reviewed on a regular basis to confirm that it continues to provide protection against all known potentially adverse health effects.

Safety Code 6

The Code is divided into 2 sections.

The first section provides:

- an overview of the purpose of the code
- a high level summary of the scientific literature showing:
 - the health effects of human exposure to radiofrequency EMFs
 - how these health effects have been used to establish the exposure limits within Safety Code 6

The second section of the Code provides:

- details on what the exposure limits are and whether they are:
 - basic restrictions, that is, exposure limits within the body
 - reference levels, that is, exposure limits outside the body
- a list of the key literature or reference materials used in the revisions to the code
- definitions of key terms used throughout the code

Technical Guide for Safety Code 6

The Technical Guide for Safety Code 6 is a companion publication intended for professional and technical users. The Technical Guide:

- contains information to help understand Safety Code 6
- provides information about survey methods and examples of calculations for the basis of assessing exposure levels
- provides recommended best practices for ensuring compliance with the maximum exposure levels for controlled and uncontrolled environments

Safety Code 6 is Based on Scientific Evidence

To establish the recommended exposure limits in Safety Code 6, we:

- consider all peer-reviewed scientific studies
- use a weight-of-evidence approach when reviewing scientific literature

Scientifically-Established Health Effects

We continuously review and consider all peer-reviewed scientific studies that investigate potential biological and adverse health effects, including thermal and non-thermal effects.

Biological effects are physiological responses that can happen for many reasons and are not necessarily harmful. An adverse health effect results in harmful conditions to the human body that might require medical attention.

There are 2 scientifically-established adverse health effects from exposures to radiofrequency EMF:

- At frequencies **below** 10 megahertz (MHz), peripheral nerve stimulation (a tingling sensation) can occur. The exposure limits in Safety Code 6 for frequencies below 10 MHz are set below the level (threshold) at which this effect could happen.

- At frequencies **above** 100 kilohertz (kHz), tissue heating can occur. The exposure limits in Safety Code 6 for frequencies above 100 kHz are set below the level (threshold) at which this could happen.

No adverse health effects have been scientifically established at levels below the limits in Safety Code 6.

Weight of evidence

The weight-of-evidence approach takes into account both the quantity of studies and, more importantly, the quality of those studies.

Properly conducted studies receive more weight. These studies have:

- appropriate statistics applied
- all of the necessary controls included
- complete evaluation of the radiofrequency source and exposure level

Poorly conducted studies receive little weight. These studies have limitations, such as:

- inadequate statistical analysis
- lack of appropriate control samples
- inadequate evaluation of the radiofrequency source and exposure level

How Safety Code 6 Protects You from Radiofrequency EMF

The exposure limits in Safety Code 6 are set to ensure the safety of all Canadians from all adverse health effects.

Safety Code 6 Protects Everyone Exposed to Radiofrequency EMF

Safety Code 6 exposure limits provide protection against all known adverse health effects for all people including:

- adults
- vulnerable populations such as children
- people who work near radiofrequency EMF sources

Based on current scientific data, we have concluded that you will not experience adverse health effects from exposure to radiofrequency EMFs at the levels permitted by Safety Code 6. This includes exposure from equipment that uses 5G technology.

A number of people have described an assortment of health symptoms that they attribute to exposure to electromagnetic fields. This collection of symptoms is often referred to as Electromagnetic Hypersensitivity (EHS). It is not a recognized medical diagnosis. While the symptoms attributed to EHS are real, scientific evidence has failed to show they are caused by exposure to electromagnetic fields.

Safety Code 6 Protects You from Combined Exposures of Radiofrequency EMF

You are protected from the combined exposure of radiofrequency EMFs from multiple sources with Safety Code 6 exposure limits in place. Safety Code 6 takes into account the total exposure from all sources of radiofrequency EMF in the range of 3kHz to 300 GHz. This includes those that may be used in 5G technology.

This means that if someone, even a small child, had continuous exposure to multiple sources of radiofrequency EMF within the Safety Code 6 limits, they would not experience adverse health effects.

Most Research Does Not Support a Link Between Radiofrequency EMF and Cancer

In 2011, the International Agency for Research on Cancer (IARC), which is part of the World Health Organization, classified radiofrequency EMFs as possibly carcinogenic to humans (Group 2B). This decision was based on limited evidence showing an increased risk for glioma, a malignant type of brain cancer, associated with wireless phone use.

However:

- IARC did not find a direct link between radiofrequency EMF exposure and cancer
- the vast majority of research to date does not support a link between radiofrequency EMF exposure and cancers in humans

We agree with the World Health Organization that additional research in this area is warranted.

International Standards for Exposure Limits

The exposure limits in Safety Code 6 are consistent with the standards used in other parts of the world, including:

- Japan
- Australia
- New Zealand
- the United States
- the European Union

Internationally, a few jurisdictions (cities, provinces or countries) have applied more restrictive limits for radiofrequency EMF exposure from cell towers. These more restrictive limits:

- have no scientific basis to support them
- are not consistently applied to other wireless devices within these same jurisdictions

What We Do to Keep You Safe from Radiofrequency EMF Exposure

To protect your health and safety, Health Canada scientists:

- develop human exposure guidelines (Safety Code 6) to radiofrequency EMF
- conduct research on the potential health effects of radiofrequency EMF exposure
- continuously monitor and analyze all domestic and international scientific literature related to the health effects of radiofrequency EMF exposure
- contribute to international efforts such as those of the World Health Organization EMF Project to assess potential health risks from radiofrequency EMF

Health Canada has also funded scientific research on radiofrequency EMF and health through the Canadian Institutes for Health Research (CIHR).

While Health Canada recommends limits for safe human exposure, the department does not regulate your exposure to radiofrequency EMFs. Innovation, Science and Economic Development Canada (ISED) regulates wireless communication equipment such as:

- Wi-Fi
- cell phones
- cell phone towers

ISED also:

- oversees the licensing and placement of cell phone towers
- ensures that these towers comply with regulatory standards for human exposure limits outlined in Safety Code 6
- considers the effects on the environment and local land use before towers are installed
- develops regulatory standards that require compliance with the human exposure limits outlined in Safety Code 6
- ensures that exposure to radiofrequency EMFs from cell phones and cell phone towers do not exceed the specified limits
- maintains a market surveillance program and routinely audits antenna installations and devices to verify compliance

If new scientific evidence were to show that exposure to radiofrequency EMF below the levels found in Safety Code 6 poses a risk, the Government of Canada would take steps to protect the health of Canadians.

Reference:

<https://www.canada.ca/en/health-canada/services/health-risks-safety/radiation/occupational-exposure-regulations/safety-code-6-radiofrequency-exposure-guidelines.html>