



SAFETY AND SAFE USE OF CELLULAR PHONES

The Issue

With the growing popularity of hand-held cellular phones (or cell phones), questions have been raised about the safety of being exposed to the radiofrequency (RF) energy they emit.

Background

The number of cell phone users in Canada has risen from 100,000 in 1987 to more than 9.5 million in 2001. This rapid expansion has raised health concerns about RF exposure, including alarming media reports that appear to link their long-term use to diseases such as brain cancer.

Cell phones are portable radio devices that transmit and receive signals from a network of fixed, low-power, base stations. The transmitting power of a cell phone varies, depending on the type of network and distance from the base station. The power generally increases as you move farther away from the nearest base station.

Prior to 1996, all cell phones in Canada were analog devices that operated in a lower cellular frequency band than that of the digital system, which was introduced in 1997. The electromagnetic energy given off by cell phones is a type of non-ionizing radiation, similar to the radiation that occurs naturally in thunderstorms.

RF electromagnetic energy is used in radio communications and broadcasting, as well as in medical treatments and industrial heating. Unlike the ionizing radiation given off by X-ray machines, RF electromagnetic energy from cell phones and other devices cannot break chemical bonds. In other words, it is unlikely to damage your body's genetic material.

Health Risks From Cell Phones

The RF electromagnetic energy generated by cell phones can penetrate your body. The depth of penetration and the amount of energy you absorb depends on many factors, such as how close you hold the cell phone to your body and how strong the signal is. The important indication of RF exposure is the rate of energy absorbed in your body. This is called the "specific absorption rate" or SAR and it is measured in watts (unit of power) per kilogram.

So far, there is currently no convincing evidence, from animal or human studies, that the energy from cell phones is enough to cause serious health effects, such as cancer, epileptic seizures or sleep disorders. Some scientists have reported that cell phone use may cause changes in brain activity, reaction times, or the time it takes to fall asleep. But these findings have not yet been confirmed.

Cell phone use is, however, not entirely risk-free. Studies have shown that:

- Using cell phones while driving may increase the chance of traffic accidents
- Cell phones may interfere with medical devices such as pacemakers, defibrillators and hearing aids
- Cell phones can also interfere with aircraft electronics

Cell Phone Safety

Department of Health

Health Canada has published Safety Code 6 - Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz. This safety code is one of a series of guidelines Health Canada has produced on the safe use of devices that emit radiation. Safety Code 6 has been adopted by many organizations across Canada and referred to in a number of regulations, including the Canada Occupational Safety and Health Regulations.

The limits given in Safety Code 6 were arrived at after looking at many scientific studies on the health effects of RF energy exposure. International exposure standards were also taken into account. For portable radio transmitters such as cell phones, the SAR limit for the general public is 1.6 watts per kilogram.

However, some studies claim that biological effects may occur at RF energy levels below the Safety Code 6 limits. These biological effects are not well established and their implications for human health need further study. Right now, there is no convincing scientific evidence to support lowering the limits. Health Canada is taking part in the International EMF Project, coordinated by the World Health Organization. The goals of this project are to verify reported biological effects from electromagnetic fields and to characterize any associated health risks to humans.

Department of Industry

Industry Canada licences radio-communication equipment, approves where cell phone base stations are located, and conducts compliance assessments on both cell phones and base stations. This department has adopted Safety Code 6 in the licencing of radiocommunication equipment and facilities. Steps have been taken to ensure that all cell phones in Canada meet the exposure limits published in Safety Code 6.

Reducing Cell Phone Risks

There is no firm evidence to date that RF emissions from cell phones cause ill health. Only you can decide if you can live with the possibility of an unknown risk from cell phone use. If you are concerned, you can reduce your risk by limiting the length of your cell phone calls and using "hands-free" devices that keep cell phones away from your head and body. Also, because of the risk of traffic accidents, do not use your cell phone while driving.

Need More Info?

Contact:

Consumer and Clinical Radiation Protection Bureau

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Ottawa, Ontario K1A 1C1
telephone: (613) 954-6699
fax: (613) 952-7584

Links to useful Web sites:

Health Canada:

www.hc-sc.gc.ca/rpb

www.hc-sc.gc.ca/hpb-dgps/therapeut/zfiles/english/publicat/alert_108_e.html

Industry Canada:

strategis.ic.gc.ca/SSG/sf01904e.html

Royal Society of Canada:

www.rsc.ca/english/RFreport.htm

World Health Organization:

www.who.int/peh-emf/