Physical Agents

Exposure to Radiofrequency Energy from Cellular Telephones

On this page

What type of energy does a cellular phone use?

Cell phones (and cell phone towers) use low-powered radiofrequency (RF) energy, a type of non-ionizing radiation. Non-ionizing radiation is not able to break the chemical bonds in your body.

Radiofrequency fields are produced by many man-made sources, including cellular (mobile) phones and base stations, television and radio broadcasting facilities, radar, medical equipment, microwave ovens, RF induction heaters, and many other electronic devices in our personal and work environments.

Can this energy be absorbed by the body?

The amount of radiofrequency energy absorbed by the body depends on a number of factors, including how close you hold the cell phone to your body, and the strength and frequency of the signal. According to Health Canada, cell phones are designed to use the lowest power necessary to connect and make calls using a network of fixed, low-power cell phone towers or base stations. The phones and towers must comply with Health Canada's guidelines in terms of human exposure to radiofrequency energy.

Are there health risks from cell phones?

The International Agency for Research on Cancer (IARC) classified radiofrequency electromagnetic fields as Class 2B "possibly carcinogenic to humans". The Class 2B is used "for agents for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals". IARC examined available literature about personal exposures associated with the use of wireless telephones, in addition to occupational exposures to radar and microwaves, and environmental exposures associated with the transmission of signals for radio, television and wireless communication. They concluded that there is "limited" evidence among users of wireless telephones for glioma (a type of brain cancer) and acoustic neuroma (a non-cancerous tumour of the nerve that connects the ear to the brain). They did not find adequate evidence to make conclusions about other types of cancers or exposures. IARC announced that while there was some evidence to support the 2B classification, more studies are required before further conclusions can be made.

Health Canada adds that "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 [electromagnetic fields] 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."

Health Canada also states that "based on the available scientific evidence, there are no health risks from exposure to the low levels of radiofrequency EMF which people are exposed to from cell phones, cell phone towers, antennas and 5G devices."

What precautions can I take if I am concerned about radiofrequency exposure?

If you wish to further reduce your potential exposure to radiofrequency energy, precautions may include:

- Limit the number and length of calls (time spent talking on the phone)
- Use hands-free devices
- Send a text message
- Make calls from areas with good reception

In addition, using cell phones or other devices can be distracting. Do not drive or participate in other activities that require attention for your personal safety while using the phone. Please see the OSH Answers document Driving Tips - Using Cellular Telephones and Other Devices for examples.

Are there guidelines about radiofrequency exposure?

Health Canada's guideline document "Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz" (commonly referred to as Safety Code 6) establishes protection measures.

Where can I get more information?

The following resources provide more information about radiofrequency and safety guidelines:

- Radiofrequency Energy and Safety - Innovation, Science and Economic Development Canada
- 5G technology, cell phones, cell phone towers and antennas - Health Canada
- Understanding Safety Code 6: Health Canada's Radiofrequency Exposure Guidelines - Health Canada
- Safety Code 6 – Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHZ - Health Canada

(*We have mentioned these organizations as a means of providing a potentially useful referral. You should contact the organization(s) directly for more information about their services. Please note that mention of these organizations does not represent a recommendation or endorsement by CCOHS of these organizations over others of which you may be aware.)

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