

# Minimize Exposure to Radiation from Wireless Communications

Radiation from wireless communication devices (WCDs) and associated transmitters was declared a possible [carcinogen](#) by the International Agency for Research on Cancer (IARC), in 2011.<sup>1,2</sup> Reviews in 2013, including more recent research, justified upgrading the classification to “probable” or “known.”<sup>3,4</sup> Now a [2014 study](#) found that over about a decade, brain cancer risks quadrupled with cell phone use for 15 hours a month, and tripled with 900 hours or more of use.<sup>5</sup>

WCDs include cellular and cordless phones, tablets, wifi, baby monitors, “smart” meters, wifi enabled appliances and other devices.

It is wise to minimize exposures to the radiation in telecommunications:

- Use wires/cables/fibre at home, work and school.
- Keep your devices at a distance, and text rather than talk. Locate transmitters (e.g. “smart” meters and wifi) away from bedrooms; towers away from homes, daycares, schools and other gathering places.
- Be strategic using your devices, communicating when the signal is strong and turning them off when possible.
- Ask for and choose the safest technologies.

## Background

According to the [International Telecommunications Union \(ITU\)](#), there are almost as many cellphone subscriptions as there are people in the world (96% of the population), with internet data plans also increasing (over 60% of subscriptions in North America and 75% in Europe). Transmission of all this information requires cell phone towers and other infrastructure, and the rules and roles of Canadian federal, provincial and local regulators and politicians are somewhat in flux. Individuals have less control over radiation from towers than they have over devices they own, but can seek more protective policies. A [2014 review](#)<sup>6</sup> argues for precautionary regulation of cellphone infrastructure.

Health Canada’s guideline for exposure to radiofrequency radiation was reviewed by the [Royal Society of Canada](#) in 2014.<sup>7</sup> Standards have remained almost unchanged since 1979, while China, Russia, Italy and Switzerland have wireless radiation limits that are [100 times safer](#) than Canada’s.<sup>8</sup>

## References

1. Baan R, Grosse Y, Lauby-Secretan B, El Ghissassi F, Bouvard V, Benbrahim-Tallaa L, et al. Carcinogenicity of radiofrequency electromagnetic fields. *Lancet Oncol.* 2011 Jul;12(7):624–6.
2. International Agency for Research on Cancer (IARC). Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields [Internet]. 2013 [cited 2013 Sep 2]. Available from: <http://monographs.iarc.fr/ENG/Monographs/vol102/index.php>
3. Hardell L, Carlberg M, Hansson Mild K. Use of mobile phones and cordless phones is associated with increased risk for glioma and acoustic neuroma. *Pathophysiology.* 2013 Apr;20(2):85–110.
4. Davis DL, Kesari S, Soskolne CL, Miller AB, Stein Y. Swedish review strengthens grounds for concluding that radiation from cellular and cordless phones is a probable human carcinogen. *Pathophysiology.* 2013 Apr;20(2):123–9.
5. Coureau G, Bouvier G, Lebailly P, Fabbro-Peray P, Gruber A, Leffondre K, et al. Mobile phone use and brain tumours in the CERENAT case-control study. *Occup Environ Med.* 2014 May 9;oeemed–2013–101754.
6. Roda C, Perry S. Mobile phone infrastructure regulation in Europe: Scientific challenges and human rights protection. *Environ Sci Policy.* 2014 Mar;37:204–14.
7. Kolb B, Demers P, Findlay R, Moulder J, Nicol A-M, Prato F, et al. A Review of Safety Code 6 (2013): Health Canada’s Safety Limits for Exposure to Radiofrequency Fields [Internet]. Expert Panel of the Royal Society of Canada; 2014 Spring. Available from: <http://rsc-src.ca/en/expert-panels/rsc-reports/review-safety-code-6-2013-health-canadas-safety-limits-for-exposure-to>
8. Gandhi OP, Morgan LL, de Salles AA, Han Y-Y, Herberman RB, Davis DL. Exposure Limits: The underestimation of absorbed cell phone radiation, especially in children. *Electromagn Biol Med.* 2012 Mar;31(1):34–51.

## Internet resources, and groups working for safer technologies

Industry Canada SAR. [http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h\\_tt00084.html](http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h_tt00084.html)

International Telecommunications Union (ITU). 2013 Facts and Figures [www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx](http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx)

US Federal Communications Commission (FCC) Specific Absorption Rate (SAR) search [www.FCC.gov/cgb/sar](http://www.FCC.gov/cgb/sar)

US Federal Trade Commission Consumer Information. Cell Phone Radiation Scams.

[www.consumer.ftc.gov/articles/0109-cell-phone-radiation-scams](http://www.consumer.ftc.gov/articles/0109-cell-phone-radiation-scams)

Bioinitiative Report [www.bioinitiative.org](http://www.bioinitiative.org)

Website of Dr. Magda Havas PhD [www.magdahavas.com](http://www.magdahavas.com)

Canadians for Safe Technology [www.c4st.org](http://www.c4st.org)

Citizens for Safe Technology [www.citizensforsafetechnology.org](http://www.citizensforsafetechnology.org)

Canadian Initiative to Stop Wireless, Electric and Electromagnetic Pollution [www.weepinitiative.org/](http://www.weepinitiative.org/)

Kawartha Safe Technology Initiative [www.kawarthasafetechnology.org](http://www.kawarthasafetechnology.org)

Environmental Health Trust <http://ehtrust.org/cell-phones-radiation-3/>

**Help us improve this resource! Email us at: [info@preventcancer.ca](mailto:info@preventcancer.ca)**



**Update: June 2014**

## Safer Use of Wireless Communications Devices (WCDs)

BE WIRED!	DISTANCE IS YOUR FRIEND	BE SAAVY	KEEP IT LOW
<i>Transit and receive information via wires or fibre.</i>	<i>When using a wireless device, keep your distance.</i>	<i>Use wireless devices strategically to reduce emissions and exposures.</i>	<i>Choose a low SAR, efficient device.</i>
<ul style="list-style-type: none"> <li>Choose to use landline telephones with a cord, and wired computer networks and baby monitors.</li> <li>If possible, opt out of “smart” meters.</li> <li>Do not purchase or install wireless-enabled devices and appliances for your home. With the rare exception of some “eco” options (not yet available in Canada), cordless devices frequently send and receive signals within their networks, even when not transmitting data.</li> </ul>	<ul style="list-style-type: none"> <li>At twice the distance from the source, there is a quarter of the radiation exposure.</li> <li>Read the manual. Many manufacturers specify that a device should always be held at a distance (up to 2.5 cm or 1 inch) from the body.</li> <li>Carry your phone away from your body – not in a pocket or a bra, or close to the abdomen, especially if you may be pregnant.</li> <li>Keep the baby monitor at a distance, not right beside the crib.</li> <li>Text instead of talking.</li> <li>Use speakerphone, or a hollow tube headset.</li> <li>If an antenna is on or close to your building, try to sleep and spend much of your time at a distance. Shielding (e.g. with conductive materials) can help if properly implemented, but has the potential to increase exposure if badly placed.</li> <li>Be careful with phone cases. A case that shields your body from radiation can potentially be counterproductive, as it partially blocks signals from the network, causing the phone to increase power output in compensation.</li> <li>Locate towers and transmitters as far as possible from homes, daycares, schools, etc.; wifi and “smart” meters and appliances away from bedrooms.</li> </ul>	<ul style="list-style-type: none"> <li>Use WCDs only when and where the signal is strong, where it can communicate using less energy.</li> <li>Keep your phone off or in “airplane mode,” except to check and respond to messages.</li> <li>Keep calls brief.</li> <li>Avoid using wireless devices in vehicles, where radiation is reflected back at you by the metal structure, and transmission energy must be higher in order to compensate. Even if the vehicle is equipped with an external antenna, don’t be a distracted driver!</li> <li>Turn off your phone, modem and other wireless devices when sleeping. A power bar with a timer is a good idea. Just to be clear, kids, this means don’t sleep with your phone!</li> <li>Children should not use cellphones unless it is an emergency. Put phones and tablets on “airplane mode” if children are playing with them.</li> <li><b>Beware</b> of free-standing “protective” crystals, etc. being promoted. They are not backed by science.</li> <li>Leave an operational device where reception is good, to minimize emissions.</li> </ul>	<ul style="list-style-type: none"> <li>The <a href="#">Specific Absorption Rate</a> or SAR is a measure of the energy you might absorb when using a particular device at maximum power output. Differences in efficiencies among devices mean that the SAR does not necessarily reflect accurately day to day exposures, but it is the only information available.</li> <li>Some jurisdictions require retailers to display SARs. Technologies are changing rapidly, devices vary globally and SAR information may not be readily available. Try searching for your model on the <a href="#">Industry Canada</a> or the <a href="#">US Federal Communications Commission</a> website.</li> <li>Remember, no matter how low your device’s SAR may be, it still must emit radiation to in order to communicate.</li> <li>If the battery is discharging quickly it might mean that you are being highly exposed. Transmission accounts for most of a phone’s power consumption, so check the battery life when the device has wifi turned off and is in “airplane mode.”</li> <li>A low power bluetooth device transmits continuously to maintain contact with the device (e.g. phone), so is not the best choice.</li> </ul>