



C4ST's comprehensive and well referenced report, "C4ST Fact-checks Government of Canada Webpages Regarding Health Risks and Wireless Technologies, including 5G,"

identifies many of the misleading and inaccurate statements made on the Government of Canada's federal ministries' webpages of Health Canada and Innovation, Science and Economic Development. <https://www.appel5gappeal.ca/eng/fact-checker.php> (excerpts follow, see footnotes on website)



Currently, the Government of Canada (GoC) provides assurances on its webpages that exposures to radiofrequency (RF) energy (=radiation) from 5G technologies and from everyday wireless devices such as cell phones and cell tower antennas are safe. **Canadians for Safe Technology (C4ST) has fact-checked some of these statements and found them to be inaccurate and misleading to the point of being "misinformation."**

Health Canada is well aware that there is substantial, strong scientific evidence that radiofrequency/microwave radiation can cause harm even when there is no heating of tissue.ⁱ Neither Health Canada nor any of the authorities it looks to for guidance have provided any studies showing safety of exposure to 5G technology emissions over the long term.^{ii,iii}

Industry-funded studies find harm less frequently than non-industry-funded studies^{iv} and in some cases can suppress results from studies showing harm.^{v,vi} Adverse effects were summarized by Levitt and Lai in 2010.^{vii} Neither Health Canada nor any "authoritative body" that it looks to for guidance has addressed this in a meaningful way. A study conducted in 2017, after the latest revision of Safety Code 6 (2015), found blood abnormalities and DNA damage in people living close to cell network antennas (base stations).^{viii}

Over the past 11 years, Safety Code 6 has been re-examined twice, resulting in only minor revisions. The process was flawed,^{ix,x} and the now disproven premise from the 1920s^{xi} that there can be no harm without significant heating remains as the basis to determine safety of wireless devices such as cell phones and network antennas. After each of these revisions of Safety Code 6 was published, hearings were held by the Parliamentary Standing Committee on Health (HESA). Both times HESA made a number of recommendations for more protective approaches and standards in Safety Code 6.^{xii} None have had any substantive implementation.

Full rollout of 5G technologies will greatly increase exposure to RF radiation, because many more cellular antennas are required for the vast number of new devices. 5G technologies introduce new frequencies (millimetre waves) not previously widely used for wireless communications, as well as frequencies common to pre-5G technologies (2G, 3G, 4G and LTE).

Users and bystanders are exposed to RF radiation from antennas built into devices such as: cell phones, tablets, and laptops; wireless printers; smart wearables; wireless earpieces, headphones, and goggles; smart appliances; and many other wireless-enabled objects. **Whether or not they are using a wireless device, everyone is exposed to RF radiation.** Wireless "coverage," "signals" or "connections" are RF radiation emissions from antennas attached to cell towers, buildings, utility poles; Wi-Fi access points; and security system equipment.

The GoC relies on Health Canada's Safety Code 6 (2015)^{xiii,xiv} with the stated goal to ensure that RF radiation exposure limits will keep Canadians safe. Innovation, Science and Economic Development (ISED)^{xv} has adopted Safety Code 6 guidelines, for compliance requirements for RF emitting wireless devices and equipment. No guideline or regulation addresses environmental effects on other mammals, birds, insects, vegetation and natural processes.

Health Canada is turning a blind eye to the science and deaf ear to the warnings of scientists, medical doctors and other experts that 5G technologies have not been tested for harmful biological effects.^{xvi,xvii} C4ST's position is that 5G rollout should be halted until scientists who are independent of industry influence demonstrate that 5G technologies are safe for Canadians.^{xviii,xix}

5G will use millimetre frequencies, in addition to many of the same frequencies already in use (2G, 3G,4G and LTE). The science on the effects of exposure to millimetre frequencies on biological systems is sparse. Most studies have looked at only one frequency in the millimetre range and not the complex RF mixtures that 5G technologies will emit.

Safety Code 6 (2015) is outdated. It does not protect the health of Canadians from RF radiation emitted by pre-5G technologies (cell phones, cell tower antennas, Wi-Fi, etc.). There is ample science to demonstrate that RF energy (=radiation) is not safe below maximum exposure limits in Safety Code 6.

- Experts maintain that a "known human carcinogen" classification is the appropriate classification. This is the same category as asbestos and cigarette smoke.
- There is indisputable evidence that there are serious health risks from exposure to radiofrequency EMF (RF radiation) at and below the maximum exposure limits in Safety Code 6 (2015). C4ST responds to this and related statements under the following headings: cancer, sperm and DNA damage, children and cell phones.
- The thousands of studies referenced above also include high-quality studies that show adverse health effects at or below Canadian limits. Ambient and commonly encountered levels of RF radiation are scientifically demonstrated to cause or contribute to cancers,^{xx,xxi,xxii,xxiii} sperm damage,^{xxiv} reproductive harms,^{xxv} learning and memory deficits,^{xxvi} and neurodegenerative, cellular and genetic damage.^{xxvii,xxviii, xxix ,xxx,xxxi,xxxii}
- A growing number of RF radiation exposed Canadians experience immediate and debilitating health problems (that could be prevented) such as headaches, irregular heartbeats, cognitive difficulties and insomnia, resulting in poor quality of life.^{xxxiii} **All Canadians are susceptible to developing such health issues, unless their ever-increasing exposure to RF radiation is curtailed.**

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- ⁱ Canadians for Safe Technology. (2020). **Compendium of Auditor General Environmental Petitions (22) and Government of Canada Replies Regarding Radiofrequency/microwave Radiation Related to Health Canada's Safety Code 6. Submitted 2007 to 2017, inclusive.** *Office of the Auditor General of Canada. Petitions Catalogue.* 651 pages. http://docs.c4st.org/GovRelations/Fed/Auditor-General/Compendium-Environmental-Petitions-Submitted-to-AG-and-Govt-of-Canada-Replies_Dec 23 2020.pdf
- ⁱⁱ **5G Appeal of International Scientists.** (2017). <http://www.5gappeal.eu/>
- ⁱⁱⁱ United States Senator Richard Blumenthal. (2019, February 7). **Press release: At Senate Commerce Hearing, Blumenthal Raises Concerns on 5G Wireless Technology's Potential Health Risk.** <https://www.blumenthal.senate.gov/newsroom/press/release/at-senate-commerce-hearing-blumenthal-raises-concerns-on-5g-wireless-technologys-potential-health-risks>
- ^{iv} Huss, A., Egger, M., Egger, M., Hug, K., Huwiler-Müntener, K., Rössli, M., ... Da Ros, M. A. (2008). **Source of funding and results of studies of health effects of mobile phone use: systematic review of experimental studies.** *Ciência & Saúde Coletiva*, 13(3), 1005–1012. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1797826/>
- ^v Hertsgaard, M., & Dowie, M. (2018, March 29). **How Big Wireless Made Us Think That Cell Phones Are Safe: A Special Investigation.** *The Nation*. <https://www.thenation.com/article/how-big-wireless-made-us-think-that-cell-phones-are-safe-a-special-investigation/>
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- ^{vii} Levitt, B. B., & Lai, H. (2010). **Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays.** *Environmental Reviews*, 18, 369–395. <https://cdnsiencepub.com/doi/10.1139/A10-018>
- ^{viii} Zothansiam, -, Zosangzuali, M., Lalramdinpuui, M., & Jagetia, G. C. (2017). **Impact of radiofrequency radiation on DNA damage and antioxidants in peripheral blood lymphocytes of humans residing in the vicinity of mobile phone base stations.** *Electromagnetic Biology and Medicine*, 1–11. <https://doi.org/10.1080/15368378.2017.1350584>
- ^{ix} Webster, P. C. (2014). **Federal Wi-Fi safety report is deeply flawed, say experts.** *CMAJ: Canadian Medical Association Journal = Journal de l'Association Médicale Canadienne*, 186(9), E300. <https://doi.org/10.1503/cmaj.109-4785>
- ^x Huh, N. Y. (2014, April 15). **Canadian scientists urge more research into safety of wireless technology, saying recent report downgrades cancer risk.** *National Post*. <https://nationalpost.com/health/canadian-scientists-urge-more-research-into-safety-of-wireless-technology-saying-recent-report-downgrades-cancer-risk>
- ^{xi} Cook, Harold J., Steneck, N. H., Vander, A. J., & Kane, G. L. (1980). **Early research on the biological effects of microwave radiation: 1940-1960.** *Annals of Science*, 37, 323–351. Page 326. <https://doi.org/10.1080/00033798000200271>
- ^{xii} a) **HESA Recommendations made subsequent to the 2010 hearings** (An examination of the potential health impacts of radiofrequency electromagnetic radiation, Report of the Standing Committee on Health, December 2010, 40th Parliament, 3rd Session): http://publications.gc.ca/collections/collection_2010/parl/XC62-403-1-1-03-eng.pdf
b) **HESA Recommendations made subsequent to the 2015 hearings** (Radiofrequency Electromagnetic Radiation and the Health of Canadians, Report of the Standing Committee on Health, June 2015, 41st Parliament, 2nd Session): <https://www.ourcommons.ca/DocumentViewer/en/41-2/HESA/report-13/page-87>
- ^{xiii} Health Canada. (2015). **Limits of human exposure to radiofrequency electromagnetic energy in the frequency range from 3 KHz to 300 GHz. Safety Code 6 (2015), 24.** Retrieved from http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/consult/_2014/safety_code_6-code_securite_6/final-finale-eng.pdf
- ^{xiv} Health Canada's Safety Code 6 (2015) recognizes only two “*established, adverse*” health effects from exposure to RF radiation: tissue heating with exposure to radiofrequencies in the higher range; and nerve stimulation at the lowest radiofrequencies. These lower frequencies are not presently in widespread use for wireless communications. C4ST's comments refer to the higher frequencies where tissue heating is the only recognized adverse effect.
- ^{xv} Previously called Industry Canada.
- ^{xvi} **5G Appeal of International Scientists.** (2017, September). <http://www.5gappeal.eu/>
- ^{xvii} **Physicians' Health Initiative for Radiation and Environment and British Society for Ecological Medicine.** (2020, October 11). Press Release. 2020 Consensus Statement of UK and International Medical and Scientific Experts and Practitioners on Health Effects of Non-Ionising Radiation (NIR). Retrieved November 12, 2020, from <https://phiremedical.org/wp-content/uploads/2020/11/Press-Release-2020-Non-Ionising-Radiation-Consensus-Statement-1.pdf>
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- ^{xix} Hardell, L., & Carlberg, M. (2020). **Health risks from radiofrequency radiation, including 5G, should be assessed by experts with no conflicts of interest.** *Oncology Letters*, 20(4). <https://doi.org/10.3892/ol.2020.11876>
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- ^{xxii} National Toxicology Program, National Institute of Environmental Health Sciences. (2020). **Cell Phone Radio Frequency Radiation.** <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>
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