

# 5G Cell “Towers” in Winnipeg Neighbourhoods

## Health Risks and Science Overview



**Global 5G Protest Day**  
**Winnipeg, Canada**  
**Saturday, January 25<sup>th</sup>, 2020**  
**5G Winnipeg Awareness**

# My Background

## **Margaret Friesen:**

- **Bachelor Science (Zoology)**
- **Masters Science (Entomology/Toxicology)**
- **Over 30 years experience with the federal government and University of Manitoba in original research:  
ecosystem toxicology, DNA population genetics**

# Overview

- **What is meant by 5G “towers”**
- **What are some of the health risks and the supporting scientific evidence**
- **What are some global and local actions**

# **Take home message: Plans for 5G Projects are Underway and We Need to Hit “Pause”**

- Risks to health are real, the science is undeniable**
- Citizens must lead, politicians are not acting**
- We have a right to know and to be consulted**
- All levels of government have a role**

# Generations of Wireless Technology

- **1G – Cell (mobile) phones with voice only**
- **2G - Voice and text**
- **3G - Internet access**
- **4G - Faster Internet access**
- **5G - The next planned upgrade**
  - **Carry more data, faster**
  - **Real time collection of data, virtual reality, gaming**
  - **Internet of Things (IoT) e.g. toaster, fridge, toothbrush**

# 5G

- 1. Installations will be close to homes, schools, and nearly everywhere else so antenna emissions can more easily penetrate through windows and walls to communicate with indoor devices**
- 2. By 2030, estimated 59 wireless devices/person**

# Antenna Installations Planned for Winnipeg

**Many thousands of small antennas  
AND more large cell towers**





Cell Tower



California



Maryland



Maryland



New York



California



Quebec



Kentucky



California



California



Ontario

Small Cell  
Antennas



British Columbia



# Small Antenna Installations

- Many 5G pilot projects across Canada
- 4G antennas also now being installed on lamp posts and poles, paving the way for 5G antennas



# Small Cell Installations Close to Homes

**Mission, BC:  
5 homes and  
at least 3 cell  
installations**





# Small Cell Installation 50 m from a Home

## Hudson, Quebec

- Now used for 4G LTE
- No public consultation or notification required because it is a “Non-Tower Structure”



# Why be Concerned?

- **Less Privacy: “Wireless Everything”**  
Anything that can be tracked, will be tracked.  
Where is this information going and what is it going to be used for?
- **Cyber-Security Risks:** Digital attacks, hacking
- **Reduced Property Values/Esthetics**
- **Environment Damage:** Bees to birds
- **Health Issues:** Because ...

# **For 2G, 3G and 4G Scientific Evidence in Non-industry Funded Studies**

**Strong evidence there are a variety of serious health problems at exposure levels far below so-called “safe” levels**

# 5G is 4G +++. Not just an upgrade

- **5G uses wavelengths used widely for 2G, 3G and 4G PLUS millimeter waves**
- **Small cell antennas needed for 5G are NOW being placed close to homes and elsewhere that are emitting only 4G.**
- **Pilot 5G projects in London, Ontario and University of BC**



# For 5G

**There is NO scientific evidence to support any claim of safety for long term 5G exposures**

# 5G



**Joel Moskowitz Ph.D.  
Public Health,  
University of California,  
Berkeley**

<https://blogs.scientificamerican.com/observations/we-have-no-reason-to-believe-5g-is-safe/>

# Canada has Outdated Safety Standards for Cell Antenna Emissions

**Safety Code 6, Health Canada's guidelines for safe exposure to humans of radiofrequency radiation,  
does not adequately protect human health**

# 53 International Scientists during the 2015 (Minor) Revision of Safety Code 6

***“Canada’s Safety Code 6 Guideline is  
fundamentally flawed...it is ... obsolete ..***

# *Health Canada has disregarded or minimized certain recent studies, such as:*

- ***DNA damage***
- ***Protein synthesis***
- ***Stress response, and***
- ***Detrimental biological and health effects in humans that occur ... below the existing Code 6 Guideline.”***

# More than 50 Canadian MDs during the 2015 (Minor) Revision of Safety Code 6

**Called for Health Canada to provide:**

***“Wireless safety standards that are more protective of the health of Canadians.”***

**All ignored by Health Canada**



# May 30, 2019

**Press Release:**

## **Ontario Doctors Warn of Rising Health Care Costs after 5G Roll Out.**

**Dr. Riina Bray, Medical Director of the Environmental Health Clinic:**

***"My clinic is already assessing patients from across Ontario who are sensitive to microwave radiation from their wireless devices including cell phones, Wi-Fi, and an increasing number of smart appliances" ...***

***"We expect 5G to add to this burden."***

# May 31, 2019

## Impacts of Wireless Technology on Health: A symposium for Ontario's medical community

*Hosted by the Environmental Health Clinic at Women's College Hospital*

**Approved for:**

6.0 Section 1 Royal College of Physicians and Surgeons of Canada

6.0 College of Family Physicians of Canada Mainpro+ and CERT+ credits

by Continuing Professional Development of the Faculty of Medicine, University of Toronto

# Other Appeals and Petitions by Scientists and Medical Doctors for Safer Standards

**Many: 3 examples ...**

# International EMF Scientist Appeal



**251 EMF Scientists from 42 Nations**

**To the United Nations and the World Health Organization:**

***“The various agencies setting safety standards have failed to impose sufficient guidelines to protect the general public...”***

# 2 Scientists Who Signed:



**Magda Havas, Ph.D.  
Trent University,  
Canada Prof Emeritus**



**Lennart Hardell, MD  
Swedish Cancer Epidemiologist**

**Cell phone and cell tower emissions should  
be classified as  
*“a known human carcinogen”*.**

# International Appeal to Stop 5G on Earth and Space



**The Appeal calls on the world's governments to stop the deployment of 5G**

**Signed by over 200 countries including:**

- **more than 7,000 scientists and medical doctors**
- **more than 2,000 environmental organizations and**
- **770 beekeepers**




# Global 5G Protest Day



- **Goal is to stop the deployment of millions of 5G antennas on Earth and 50,000 5G satellites in space**
- **Secure emergency high-level meetings with officials in governments and international governmental organizations including the European Union, the United Nations, and the World Health Organization**

# Safety Code 6 Guidelines are Much Too High



PUBLIC EXPOSURE GUIDELINES	INTENSITY (mW/m <sup>2</sup> )	SPEED ANALOGY in km/hour
→ Safety Code 6 (for 6 GHz and higher)	10,000	4,800
Belgium, parts of Italy	100	480
Austrian Sustainable Building Council	1	50
EUROPAEM* (MDs)	0.1	15
Natural (all frequencies)	0.001	< 1
Cosmic background	0.000000001	< 1

\* Belyaev, et al. (2016). EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses.

Modified from Powerwatch  
<https://www.powerwatch.org.uk/science/intguidance.asp>

# Cell Tower Health Studies Report

## Adverse Health Effects

**One recent example from India:**

***“The present study demonstrated that staying near the mobile base stations and continuous use of mobile phones damage the DNA... may lead to several health disorders including ... cancer”***

**Zothansيامa, et al. 2017**

# Brain tumours



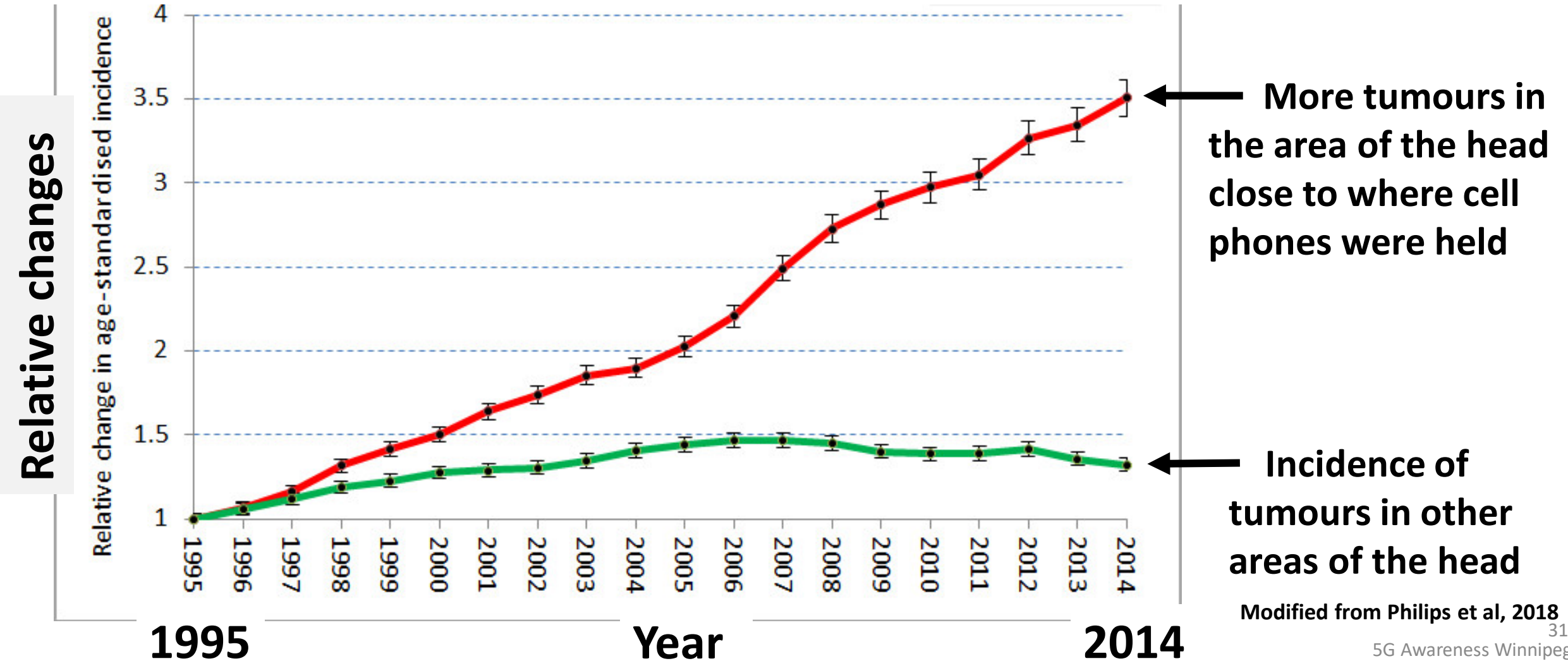
**The Court of Appeal of Turin confirms the link between a head tumour and mobile phone use**

**Italy: a landmark judgment requires the state to inform the population of the health risks due to mobile phones**

**[Press release] Brain cancers : 4 times more new cases of glioblastoma in 2018 according to Public Health France**



# Brain Tumour Cancer Data from the United Kingdom



# Canadian Brain Cancer Data

**2x increased risk of glioma  
with over 558 lifetime hours\* of cell phone use\*\***

**\* about 10 minutes/day for 10 years**

**\*\* adjusted for selection and recall bias**

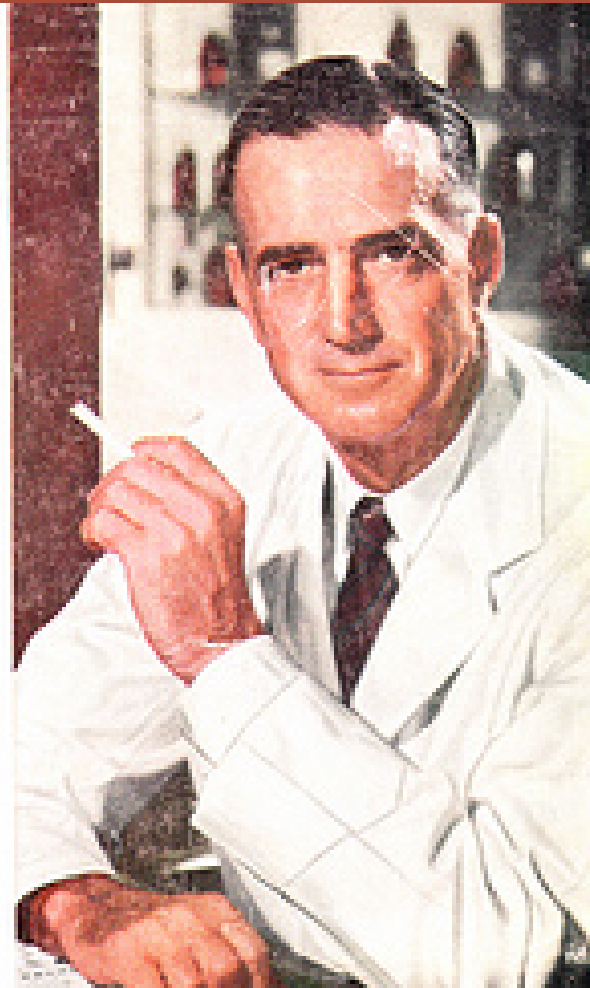


# Health Canada has been Slow to Act on Other Toxic Agents

- **Asbestos**
- **Cigarette Smoking**
- **Dioxins**
- **Thalidomide**
- **Urea formaldehyde insulation and**
- **Others - Vaping**

# Misinformation from Industry: Doubt is Our Product

*According to repeated nationwide surveys,*  
**More Doctors  
Smoke CAMELS  
than any other  
cigarette!**



# Cell Phone Companies' Warnings

**“Top mobile phone firms warning shareholders over devices’ possible cancer risks – but fail to tell customers”**

<https://ehtrust.org/top-mobile-phone-firms-warning-shareholders-over-devices-possible-cancer-risks-but-fail-to-tell-customers/>

<https://www.mirror.co.uk/news/uk-news/top-mobile-phone-firms-warning-12637044>

# Insurance Exclusions for Health Damages

**Swiss Re is the world's second largest secondary insurance (reinsurance) company.**

**- “*explicitly refusing to insure against damages from 5G and other EMFs*”**

## Pending Government Immunity for Telecoms Uninsurable 5G Network?



Devra Davis [Follow](#)

Jun 14 · 5 min read ★



<https://medium.com/@devradavis/pending-government-immunity-for-telecoms-uninsurable-5g-network-cffc43f61e8b>

# **International Actions to Halt and Delay 5G**

- **Halt deployment of 5G: Brussels, Belgium and 15 municipalities in Italy**
- **Range of actions: Australia, Austria, France, Switzerland, USA**

# Actions in Canada by Local Groups

## **British Columbia:**

- **Victoria, Salt Springs Island – presentations and protest demonstrations**

## **Ontario:**

- **London – briefs objecting to 5G pilot projects**
- **Niagara Falls – presentations opposing 5G**
- **Kingston – citizens group to stop 5G, protest demonstration**

## **Quebec:**

- **Sutton: Resolution passed unanimously to federal government for a 5G moratorium**

# **Can We Do Anything to Stop Cell Installations in Our Neighbourhoods?**

**Time is short...**

- **The City of Winnipeg staff is preparing a report on “implementing and permitting”**
- **Manitoba Hydro is in talks with providers**

# Possible Local Actions

- **Raise Public Awareness**: sign and distribute the 5G Winnipeg Awareness petition and information materials, in person and using social media
- **Contact City of Winnipeg Councillors, MLAs and MPs** with your concerns and ask what they will do to stop installations of small 4G/5G cell antennas in neighbourhoods



# City of Winnipeg

- 1. Say “Wait” to telecommunications 5G proposals**
- 2. If that is not an option, Councillors can write a letter of “Non-Concurrence” objecting to rollout of infrastructure in their wards**
  - There are precedents: At least 2 cases where cell towers were not built in Winnipeg after Councillors wrote a “Non-Concurrence” letter**

# Province of Manitoba

- 1. Manitoba Hydro controls the use of lamp posts, utility poles, etc.**
- 2. The Manitoba Provincial Public Health authorities can recommend a moratorium**

# Federally – Members of Parliament


- 1. Ask MPs to intervene.**
- 2. Ask the Minister of Innovation, Science and Economic Development (ISED) and the Minister of Health for a 5G moratorium. The Minister of ISED has the final word on cell antenna installations.**
- 3. Ask to have Health Canada's Safety Code 6 revised to be adequately protective of our health**

# A Moratorium is Urgently Needed

- **Too many important unanswered questions...**
- **Let's put the brakes on until we get some satisfactory answers**
- **We have a “Right to Know” and to be consulted.**

# Hand outs

## 1. Postcard – has basic information and websites




**The 5G Appeal**  
[www.5gappeal.eu](http://www.5gappeal.eu)

“Scientists and doctors call for a moratorium on the roll-out of 5G. 5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) that have been proven to be harmful for humans and the environment.”

**The International EMF Scientist Appeal**  
[www.emfscientist.org](http://www.emfscientist.org)

**5<sup>th</sup> Generation Technology**

Not just an upgrade for cell phones and other wireless devices to carry more data at faster speeds... But also more electrosmog, biologically active radiofrequency radiation emissions, from so-called small cell antennas close to our homes and schools. And MORE cell towers.



Mission, BC

Photo: EMR Health Alliance BC

**REASONS FOR CONCERN**

Many, perhaps thousands in Winnipeg, of radiation-emitting network antennas within meters of homes and schools with no notification or public consultation.

No long-term safety testing. Neither Health Canada nor Innovation, Science and Economic Development Canada can point to any peer-reviewed evidence-based science that shows 5G technology is safe. What we do know is of concern:

- **Cancer.** Everyday emissions are RF-EMF, which is a Class 2B, *possible* human carcinogen (World Health Organization). Lead and DDT are in the same Class. More recent research evidence supports a *known* carcinogen classification.
- **Many other health effects**

We should learn from past public health disasters. Asbestos, cigarette smoking, bisphenol-A (BPA), thalidomide and urea formaldehyde insulation. [c4st.org/5g](http://c4st.org/5g)

**WEBSITES • RESOURCES • CONTACTS**

Canadians for Safe Technology [c4st.org](http://c4st.org)  
Environmental Health Trust [ehtrust.org](http://ehtrust.org)  
Physicians for Safe Technology [mdsafetech.org](http://mdsafetech.org)  
Electromagnetic Pollution Illnesses Canada (EPIC) [twitter.com/iexistworld](http://twitter.com/iexistworld)  
Alternatives: <https://connected-communities.ca/>

Press Release + Video + Medical Symposium  
**Ontario Doctors Warn of Rising Health Care Costs after 5G Roll Out** [c4st.org/ontario-doctors-warn-of-rising-health-care-costs-after-5g-roll-out](http://c4st.org/ontario-doctors-warn-of-rising-health-care-costs-after-5g-roll-out)

Manitoba Eco-Network Journal Article  
**What is 5G? How could it affect our health and environment?** M Friesen MSc  
pages 2 & 3 at [mbeconetwork.org/wp-content/uploads/2019/05/Eco\\_Journal-Summer-19\\_online.pdf](http://mbeconetwork.org/wp-content/uploads/2019/05/Eco_Journal-Summer-19_online.pdf)

Published Research  
**5 G wireless telecommunications expansion: Public health and environmental implications**  
Cindy Russell MD Environmental Research, 165, 484–495.  
<https://doi.org/10.1016/j.envres.2018.01.016>

**5G Awareness Winnipeg** [safer.wireless@gmail.com](mailto:safer.wireless@gmail.com)

2. The Stop 5G petition – for information and/or getting people to sign
3. Sign the sheet to get on an email list for Saturday May 2<sup>nd</sup> 5G Forum

Thank you.

Questions?



# Supplemental Information

## **Photo credits:**

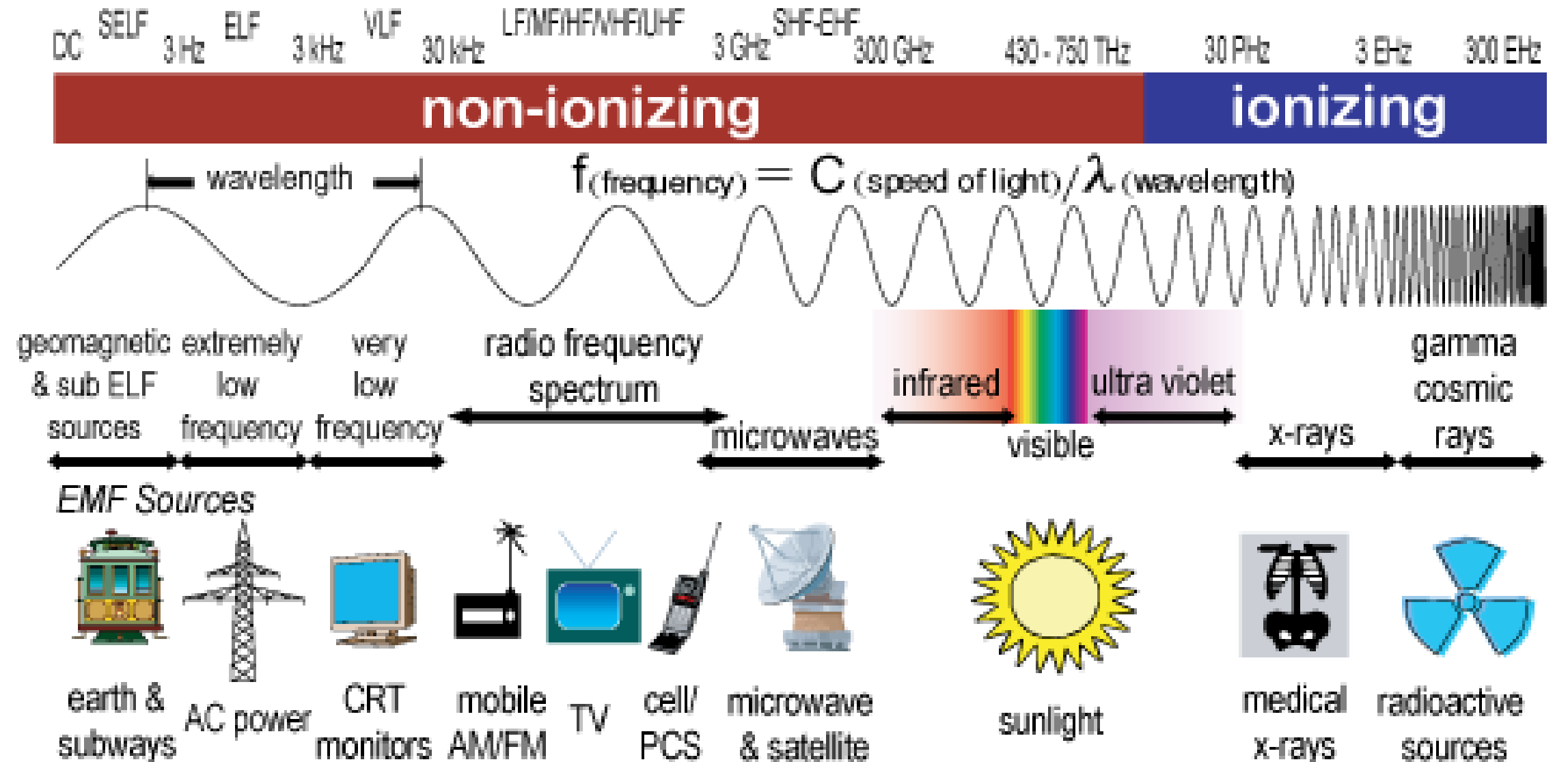
- **EMR Health Alliance BC**
- **Homeowner, Hudson, Quebec**
- **5G crisis**
- **International EMF Scientist Appeal**
- **Environmental Health Trust**

# Electromagnetic fields - EMF

A field of force that consists of both electric and magnetic components, resulting from the motion of an electric charge and containing a definite amount of electromagnetic energy.

Cannot see, taste or smell EMFs. We are electrical beings e.g. EKGs (heart), EEGs (brain)

# THE ELECTROMAGNETIC SPECTRUM



Gigahertz (GHz) 10<sup>-9</sup> Terahertz (THz) 10<sup>-12</sup> Petahertz (PHz) 10<sup>-15</sup> Exahertz (EHz) 10<sup>-18</sup> Zettahertz (ZHz) 10<sup>-21</sup> Yottahertz (YHz) 10<sup>-24</sup>

# Cell Tower Studies

1. Abdel-Rassoul, G., El-Fateh, O. A., Salem, M. A., Michael, A., Farahat, F., El-Batanouny, M., & Salem, E. (2007). **Neurobehavioral effects among inhabitants around mobile phone base stations.** *Neurotoxicology*, 28(2), 434–440. <https://doi.org/10.1016/j.neuro.2006.07.012>
2. Bortkiewicz, A., Gadzicka, E., Szyjewska, A., Politański, P., Mamrot, P., Szymczak, W., & Zmyślony, M. (2012). **Subjective complaints of people living near mobile phone base stations in Poland.** *International Journal of Occupational Medicine and Environmental Health*, 25(1), 31–40. <https://doi.org/10.2478/s13382-012-0007-9>
3. Eger, H., Hagen, K. U., Lucas, B., Vogel, P., & Voit, H. (2004). **[The influence of being physically near to a cell phone transmission mast on the incidence of cancer] Einfluss der räumlichen Nähe von Mobilfunksendeanlagen auf die Krebsinzidenz (in German).** *Umwelt Medizin Gesellschaft -Verlag-Ges.*, 17(4), 1–7.
4. Hutter, H.-P., Moshhammer, H., Wallner, P., & Kundi, M. (2006). **Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations.** *Occupational and Environmental Medicine*, 63(5), 307–313. <https://doi.org/10.1136/oem.2005.020784>
5. Levitt, Blake, & Lai, Henry. (2010). **Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays.** *NRC Press*.
6. Santini, R., Santini, P., Danze, J. M., Le Ruz, P., & Seigne, M. (2003). **[Symptoms experienced by people in vicinity of base stations: II/ Incidences of age, duration of exposure, location of subjects in relation to the antennas and other electromagnetic factors].** *Pathologie-Biologie*, 51(7), 412–415.
7. Santini, Roger. (2003). **Study of The Health of People Living in The Vicinity of Mobile Phone Base Stations.** *Pathol*

# Wireless radiation in the radiofrequency/microwave range and adverse health effects: Key peer-reviewed papers (14) 1 of 5

- **PAPERS IN PEER-REVIEWED JOURNALS:**

**CANCER – EVIDENCE TO SUPPORT A GROUP 1 KNOWN HUMAN CARCINOGEN CLASSIFICATION (WORLD HEALTH ORGANIZATION, INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (WHO-IARC)**

- Miller, A. B., et al. . (2018). **Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102).** *Environmental Research*, 167, 673–683. <https://doi.org/10.1016/j.envres.2018.06.043> <https://www.ncbi.nlm.nih.gov/pubmed/30196934>
- Hardell, L., & Carlberg, M. (2018). **Comments on the US National Toxicology Program technical reports on toxicology and carcinogenesis study in rats exposed to whole-body radiofrequency radiation at 900 MHz and in mice exposed to whole-body radiofrequency radiation at 1,900 MHz.** *International Journal of Oncology*. <https://doi.org/10.3892/ijo.2018.4606> <https://www.ncbi.nlm.nih.gov/pubmed/30365129>

Anthony B. Miller, MD, FRCP, FRCP(C), FFPH, FACE. Professor Emeritus, Dalla Lana School of Public Health, University of Toronto. A physician-epidemiologist, he was trained in internal medicine, and was a member of the scientific staff of the Tuberculosis and Chest Diseases Research Unit, UK Medical Research Council, 1962-71. He was Director of the Epidemiology Unit of the National Cancer Institute of Canada 1971-86 and Chair of the Department of Preventive Medicine and Biostatistics, University of Toronto, 1992-96. He served as a special expert in the Division of Cancer Prevention, US National Cancer Institute, 1997, Senior Epidemiologist, International Agency for Research on Cancer 1998-99, Head, Division of Epidemiology, German Cancer Research Centre, Heidelberg, 2000-03, Associate Director, Research, Dalla Lana School of Public Health, University of Toronto, 2008-10. He has been a consultant to the World Health Organization. He is Scientific Lead of the OncoSim microsimulation modelling initiative of the Canadian Partnership Against Cancer. His research encompasses cancer etiology, prevention and screening.



# Wireless radiation in the radiofrequency/microwave range and adverse health effects: Key peer-reviewed papers (14) 2 of 5

## CANADIAN BRAIN CANCER DATA – 2X RISK OF GLIOMAS WITH >558 HOURS OF CELL PHONE USE

- Momoli, F., et al. D. (2017). Probabilistic Multiple-Bias Modeling Applied to the Canadian Data From the Interphone Study of Mobile Phone Use and Risk of Glioma, Meningioma, Acoustic Neuroma, and Parotid Gland Tumors. *American Journal of Epidemiology*, 186(7), 885–893. <https://doi.org/10.1093/aje/kwx157>  
<https://www.ncbi.nlm.nih.gov/pubmed/28535174>

## BRAIN CANCER INCIDENCE IN ENGLAND

- Philips, Alisdair, Henshaw, Denis L., Lamburn, Graham, & O’Carroll, Michael. (2018). Brain tumours: rise in Glioblastoma Muliforme incidence in England 1995-2015 suggests an adverse environmental or lifestyle factor. *Journal of Environmental and Public Health*, 20. <https://www.hindawi.com/journals/jeph/2018/7910754/>

## CANADIAN COLORECTAL CANCER INCIDENCE IN YOUNGER ADULTS IS “CONTINUING AND POSSIBLY ACCELERATING”

- Brenner, D. R., Heer, E., Sutherland, R. L., Ruan, Y., Tinmouth, J., Heitman, S. J., & Hilsden, R. J. (2019). National Trends in Colorectal Cancer Incidence Among Older and Younger Adults in Canada. *JAMA Network Open*, 2(7), e198090–e198090. <https://doi.org/10.1001/jamanetworkopen.2019.8090>

## INCREASED ABSORPTION OF RADIOFREQUENCY ENERGY IN CHILDREN

- Fernández, C., de Salles, A. A., Sears, M. E., Morris, R. D., & Davis, D. L. (2018). Absorption of wireless radiation in the child versus adult brain and eye from cell phone conversation or virtual reality. *Environmental Research*, 167, 694–699. <https://doi.org/10.1016/j.envres.2018.05.013>
- <https://www.sciencedirect.com/science/article/pii/S0013935118302561>

## **Wireless radiation in the radiofrequency/microwave range and adverse health effects: Key peer-reviewed papers (14) 3 of 5**

### **PUBLIC HEALTH RISKS (BOTH MILLER AND RUSSELL ARE MEDICAL DOCTORS)**

- **Miller, A. B., et al. (2019). Risks to Health and Well-Being From Radio-Frequency Radiation Emitted by Cell Phones and Other Wireless Devices. *Frontiers in Public Health*, 7.**  
*<https://doi.org/10.3389/fpubh.2019.00223>*  
*<https://www.frontiersin.org/articles/10.3389/fpubh.2019.00223/full>*
- **Russell, C. L. (2018). 5 G wireless telecommunications expansion: Public health and environmental implications. *Environmental Research*, 165, 484–495.** *<https://doi.org/10.1016/j.envres.2018.01.016>*  
*Website: Physicians for Safe Technology - <https://mdsafetech.org/>*

# Wireless radiation in the radiofrequency/microwave range and adverse health effects: Key peer-reviewed papers (14) 4 of 5

## BEHAVOURAL PROBLEMS IN CHILDREN

- Birks, L., et al. (2017). Maternal cell phone use during pregnancy and child behavioral problems in five birth cohorts. *Environment International*, 104, 122–131.  
<https://doi.org/10.1016/j.envint.2017.03.024>  
<https://www.ncbi.nlm.nih.gov/pubmed/28392066>

## ADVERSE EFFECTS ON SPERM QUALITY (ONE OF SEVERAL REVIEWS WITH SIMILAR CONCLUSIONS)

- Houston, B. J., Nixon, B., King, B. V., De Iuliis, G. N., & Aitken, R. J. (2016). The effects of radiofrequency electromagnetic radiation on sperm function. *Reproduction* (Cambridge, England), 152(6), R263–R276. <https://doi.org/10.1530/REP-16-0126>  
<https://www.ncbi.nlm.nih.gov/pubmed/27601711>

## DNA DAMAGE – OVER 30 STUDIES SHOWING DAMAGE AT UNDER SAFETY LEVEL EXPOSURES

- Panagopoulos, D. J. (2019). Comparing DNA damage induced by mobile telephony and other types of man-made electromagnetic fields. *Mutation Research/Reviews in Mutation Research*, 781, 53–62. <https://doi.org/10.1016/j.mrrev.2019.03.003>
- <https://www.sciencedirect.com/science/article/pii/S1383574218300991>

# Wireless radiation in the radiofrequency/microwave range and adverse health effects: Key peer-reviewed papers (14) 5 of 5

## OXIDATIVE STRESS (CAN LEAD TO MANY HEALTH CONDITIONS INCLUDING CANCER, ALZHEIMER'S AND PARKINSON'S DISEASE)

- Yakymenko, et al. (2016). Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. *Electromagnetic Biology and Medicine*, 35(2), 186–202.  
<https://doi.org/10.3109/15368378.2015.1043557><https://www.ncbi.nlm.nih.gov/pubmed/26151230>

## ELECTROHYPERSENSITIVITY (EHS)

- Belyaev, I., et al. (2016). EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. *Reviews on Environmental Health*, 31(3).  
<https://doi.org/10.1515/reveh-2016-0011>
- Havas, M. (2019). Electrohypersensitivity (EHS) is an Environmentally-Induced Disability that Requires Immediate Attention. *J. Sci. Discov.*, 3(1), 20. <https://doi.org/jsd18020>

## CELL TOWER EXPOSURE STUDY (DNA DAMAGE, OXIDATIVE STRESS)

- Zothansiam, null, Zosangzuali, M., Lalramdinpui, 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> <https://www.ncbi.nlm.nih.gov/pubmed/28777669>

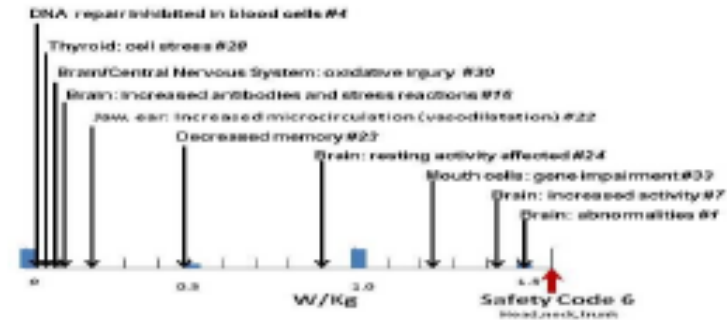
# Studies Recognized by Health Canada- adverse effects below Safety Code 6

Summary of potentially harmful effects documented in thirty-six (36) studies which Health Canada determined to be "in scope" for Safety Code 6 Risk Assessment (see minutes of House of Commons, Standing Committee on Health: HESA, 54, 2nd Session, 41st Parliament, 24 March 2015). These studies are in the CAST "140 omitted studies" report submitted to Health Canada, 15 July 2014. None are in Safety Code 6 Rationale (2015) nor in the Royal Society of Canada's Expert Panel report (2014) nor in any of their "Authoritative Reviews". All studies are in the cell/mobile phone frequency range of 900MHz to 2450 MHz, except #26 (2575 MHz) and some in IV. Specific Absorption Rate (SAR) levels were taken from the original papers and from EMF Portal <http://www.emf-portal.de/> # indicates the number of the reference on the next page.

## I. Epidemiological-type studies (6), Case report (1), Literature review (1), Laboratory tests (1):

CONDITION	FINDINGS
Brain cancer: #17,18 Swedish case-control studies [note: Hardell et al. recently published a further study]	Dr. Hardell now recommends a World Health Organization, International Agency on Cancer Research (WHO/IARC) Group 1, known carcinogen classification [along with asbestos and cigarette smoke]. Dr. Hardell's work was used by the WHO/IARC to reach a near unanimous Group 2b, possible carcinogen classification in 2011.
Brain cancer: French case-control study #10	Higher cancer incidence among earliest and heaviest mobile phone users; findings are consistent with Hardell's group's work
Breast cancer: #35	USA case report of four (4) young women with no familial history of breast cancer in the precise location where they tucked their cell phones in their bras
Acoustic Neuroma: #19 Benign tumour on 8th cranial nerve	Confirmation of previous studies of an association with mobile/cordless phone use
Infertility: #21	Review found adverse effects. Conclusion: "... men should not keep mobile phone in their trouser pockets or near testicles to avoid potential harmful effect..."
Children: Attention Hyperactivity Deficit Disorder (ADHD) #6	Association with mobile phone use among children with higher lead levels
Children: 7 years in age #13	Behavioural problems associated with prenatal exposure
Electrohypersensitivity (EHS):#11	Laboratory tests: thyroid and liver dysfunction, chronic inflammation

## II Biological effects below Safety Code 6 SAR for the head, neck and trunk (1.6 W/kg): Human, animal and cell culture studies



## III Biological effects below Safety Code 6 SAR for whole body (0.08) W/kg: Human, animal and cell culture studies

%SC6	BIOLOGICAL EFFECTS	%SC6	BIOLOGICAL EFFECTS
1%	Brain: single strand DNA breaks #12	21%	Thyroid: cell stress #28
1%	Brain: oxidative stress, cognitive impairment, inflammation #27	38%	New born decreased body weight, effects on biochemistry #15
20%	Brain nerve development: increase in damaged cells #3	63%	Brain: dopamine and serotonin changes, impaired behaviour # 25
20%	Brain: cell loss, decrease in Purkinje cells #32	75%	Liver: DNA strand breaks #15

## IV Other studies

Other studies (n=10): All >SC6. All showed effects. #5, 8, 9, 14, 20, 26, 29, 31, 34, 36.

# Canadian data:

**2X increased risk of glioma with over 558 lifetime hours of cell phone use**

**(about 10 minutes per day for 10 years)**

**“For glioma, when comparing those in the highest quartile of use (>558 lifetime hours) to those who were not regular users, the odds ratio was 2.0 (95% confidence interval: 1.2, 3.4). After adjustment for selection and recall biases, the odds ratio was 2.2 (95% limits: 1.3, 4.1).” Momoli et al. 2017.**



# **Wireless radiation in the radiofrequency/microwave range and adverse health effects: Videos (3)**

## **VIDEOS:**

**1. Less than 5 minutes:. Dr. Anthony Miller: Radio Frequency Radiation, Cancer and Cell Towers Statement to School District. Statement that wireless radiation should be classified as a Class 1 known carcinogen.**

**<https://www.youtube.com/watch?v=LPs6PAG1H6c>**

**2. About 24 minutes (2017): Dr. Anthony Miller: Epidemiology of Cell Phones and Other Wireless Transmitting Devices – An Update (describes the evidence supporting an IARC Class 2A probable human carcinogen classification). Expert Forum: Wireless Radiation and Human Health. Hebrew University Medical School, January 23-26, 2017**

**<https://ehtrust.org/science/key-scientific-lectures/2017-expert-forum-wireless-radiation-human-health/>**

**3. About 1 hour -Devra Davis PhD. MPH. (2015) The truth about mobile phone and wireless radiation Dean's Lecture at University of Melbourne, School of Engineering**

**<https://ehtrust.org/science/key-scientific-lectures/dr-davis-delivered-the-deans-lecture-at-melbourne-school-of-engineering/>**

# 59 wireless devices/person on Earth

Source: Cisco projects 500 billion devices

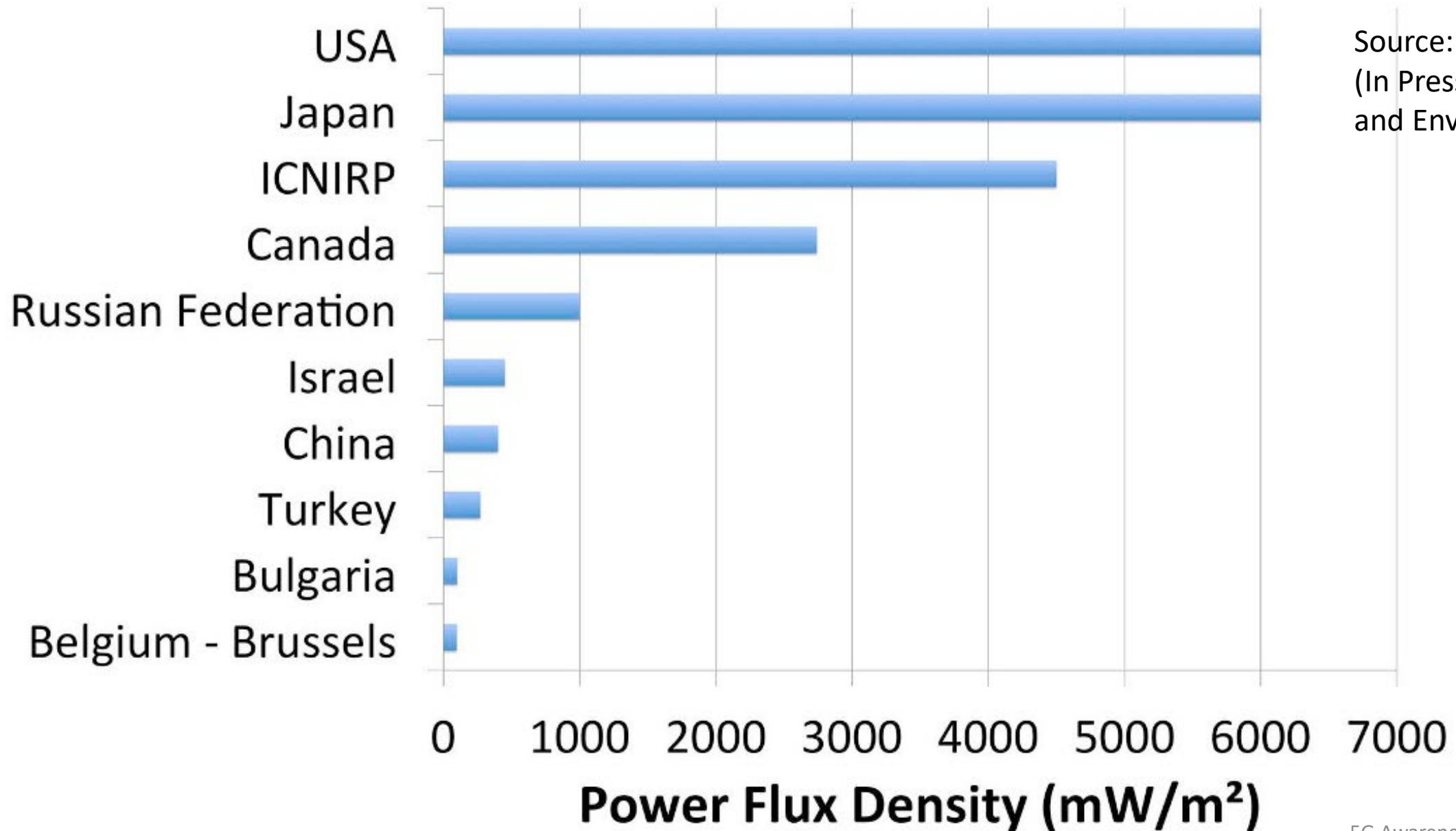
<https://www.cisco.com/c/dam/en/us/products/collateral/se/internet-of-things/at-a-glance-c45-731471.pdf>

and the UN projects 8 billion people

<https://www.un.org/sustainabledevelopment/blog/2015/07/un-projects-world-population-to-reach-8-5-billion-by-2030-driven-by-growth-in-developing-countries/>

[https://www.youtube.com/watch?v=Wm69ik\\_Qdb8](https://www.youtube.com/watch?v=Wm69ik_Qdb8)

# International RFR power flux density exposure limits at 900 MHz



Source: Clegg et al.  
(In Press). Building  
and Environment

# Safer Alternatives – fiber optic cables

- Optical fiber cable, and wires: safest, fastest, most secure and resilient, lowest-energy.
- To-and-through-the-premises
- Cell phone service from current antennas

SafeG: <https://safeg.net/about/>

# **Swiss Re 2019 Report - New emerging risk insights**

## **Classifies 5G as “HIGH” Impact Emerging Risk**

***“As the biological effects of EMF in general and 5G in particular are still being debated, potential claims for health impairments may come with a long latency.”***

<https://www.mirror.co.uk/news/uk-news/top-mobile-phone-firms-warning-12637044>

<https://ehtrust.org/top-mobile-phone-firms-warning-shareholders-over-devices-possible-cancer-risks-but-fail-to-tell-customers/>

# **Intensity (power density) is one factor, as well as ...**

**Wavelength/frequency -Near field/far field - Overall duration (continuous/interrupted) - Acute/chronic exposures - Polarization (linear, circular) - Continuous waves (CW) and pulsed fields (pulse repetition rate, pulse width, or duty cycle, pulse shape, pulse to average power, etc.) - Modulation (amplitude, frequency, phase, complex) -Static magnetic field at the place of exposure - Electromagnetic stray field**

**Belyaev (2008) Problems in assessment of risks from exposures to microwaves of mobile communications <https://www.ncbi.nlm.nih.gov/pubmed/18380333>**

# Government needs to take a proactive approach

## Suggested actions for Niagara Falls Council

1. Councillors commit to educate themselves about health effects of all “generations” of wireless telecommunications
2. Provide public education as to safer options and use of digital devices
3. Request Niagara Region Public Health (in conjunction with OPH) to start monitoring and reporting on the exposure to, and related health effects of RF radiation
4. Require proof of liability insurance against harmful effects of RFR on health from all telecommunications companies deploying wireless technologies
5. Require public notice and consultation for all cellular antennae until Safety Code 6 is updated using the international standards of scientific review <sup>1</sup>
6. Place a moratorium on the installation of small cell antennae on city owned property until Safety Code 6 is updated using the international standards of scientific review <sup>1</sup>

<sup>1</sup>Rooney, Andrew A., Abee L. Boyles, Mary S. Wolfe, John R. Bucher, and Kristina A. Thayer. “Systematic Review and Evidence Integration for Literature-Based Environmental Health Science Assessments.” *Environmental Health Perspectives* 122, no. 7 (July 2014): 711–18. <https://doi.org/10.1289/ehp.1307972>

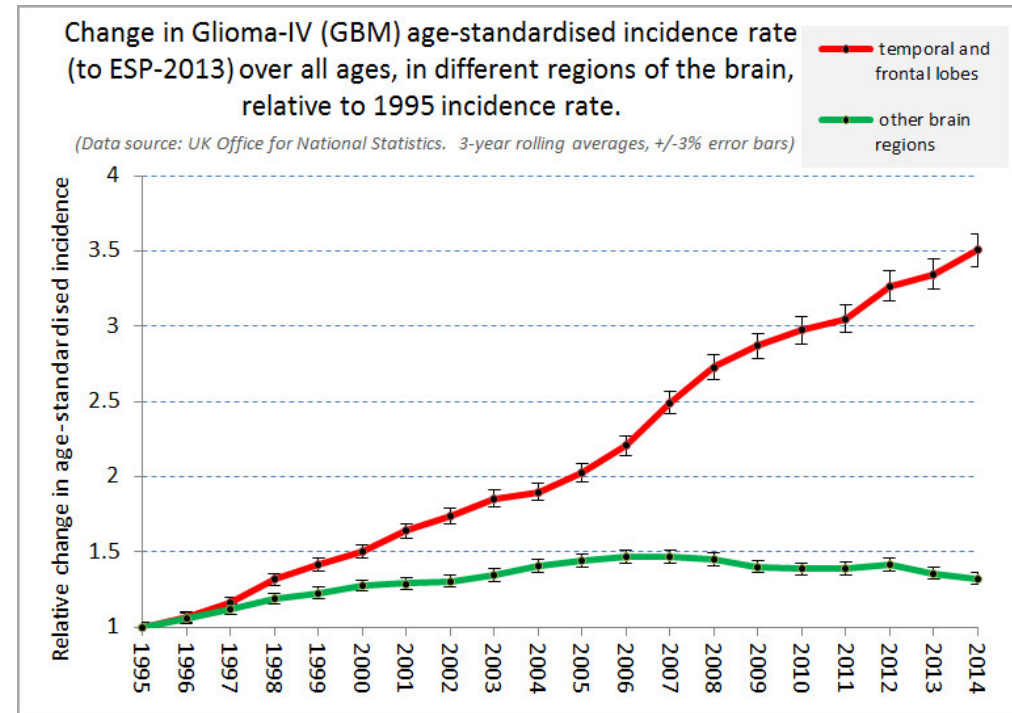


## CANCERS INCREASING

Glioblastoma location in the UK  
(Philips et al, 2018)

A FEW NORTH AMERICAN EXAMPLES:

- Testicular cancer increasing in Canadian adolescents and young adults
- Dr. Jacob Easaw, AB neuro-oncologist, observed increasing aggressive gliomas in young Canadians
- US adolescents and young adults experiencing increases in aggressive gliomas



# Links: International Actions to Halt and Delay 5G

- **Brussels, Belgium**<sup>2</sup> and 15 Municipalities in **Italy**<sup>1</sup>: halted deployment of 5G **Austria**<sup>3</sup>: Parliament has commissioned a study on 5G health effects **Switzerland**<sup>4</sup> : Will monitor radiation levels amidst 5G rollout **Australia, US** –

<sup>1</sup><https://oasisana.com/2019/06/24/esclusivo-sindaci-stop-5g-ecco-la-prima-ordinanza-ditalia-di-sospensione-e-la-lista-delle-13-delibere-di-giunta-e-mozioni-comunali-per-la-precauzione/?fbclid=IwAR38YOvu-PkPfgmhsu5k8Bnerz6aol3SB5sExYpqAL9PH56mFw3YkFss8Y8>

<sup>2</sup><https://www.hln.be/in-de-buurt/brussel/brusselse-regering-weigert-5g-brusselaars-zijn-geen-proefkonijnen~a92c8130/?referer=https%3A%2F%2Fwww.google.com%2F&referer=https%3A%2F%2Fehtrust.org%2Finternational-actions-to-halt-and-delay-5g%2F>

<sup>3</sup><https://www.vedomosti.ru/technology/articles/2019/03/28/797714-minoboroni-otkazalos-peredavat-5g>

<sup>4</sup><https://www.reuters.com/article/us-swiss-5g/switzerland-to-monitor-potential-health-risks-posed-by-5g-networks-idUSKCN1RT159>

# International EMF Scientist Appeal

International EMF Scientist Appeal calls for greater health protection In May 2015, 190 scientists submitted the International EMF Scientist Appeal addressed to the top leaders at the United Nations, the World Health Organization, and the UN Environment Program. The Appeal urgently calls for greater health protection in the midst of what has become an historic, global phenomenon --the rapid expansion and proliferation of wireless communications and electrical technologies.

The over 240 scientists refer to the fact that "numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines". Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plants and animals.

# US Actions 5G

June, 2019 - **Oregon Senate Bill 283** directs Oregon Health Authority to review peer-reviewed, independently funded scientific studies of health effects of exposure to microwave radiation, particularly in schools and to report results not later than January 2, 2021.

July, 2019 - **New Hampshire House Bill 522** establishes a commission to study the environmental and health effects of 5G technology

<sup>1</sup>[https://oasisana.com/2019/06/24/esclusivo-sindaci-stop-5g-ecco-la-prima-ordinanza-ditalia-di-sospensione-e-la-lista-delle-13-delibere-di-giunta-e-mozioni-comunali-per-la-precauzione/?fbclid=IwAR38YOvu-](https://oasisana.com/2019/06/24/esclusivo-sindaci-stop-5g-ecco-la-prima-ordinanza-ditalia-di-sospensione-e-la-lista-delle-13-delibere-di-giunta-e-mozioni-comunali-per-la-precauzione/?fbclid=IwAR38YOvu-PkPfgmhsu5k8Bnerz6aol3SB5sExYpqAL9PH56mFw3YkFss8Y8)

[PkPfgmhsu5k8Bnerz6aol3SB5sExYpqAL9PH56mFw3YkFss8Y8](https://oasisana.com/2019/06/24/esclusivo-sindaci-stop-5g-ecco-la-prima-ordinanza-ditalia-di-sospensione-e-la-lista-delle-13-delibere-di-giunta-e-mozioni-comunali-per-la-precauzione/?fbclid=IwAR38YOvu-PkPfgmhsu5k8Bnerz6aol3SB5sExYpqAL9PH56mFw3YkFss8Y8)

<sup>2</sup><https://www.hln.be/in-de-buurt/brussel/brusselse-regering-weigert-5g-brusselaars-zijn-geen-proefkonijnen~a92c8130/?referer=https%3A%2F%2Fwww.google.com%2F&referer=https%3A%2F%2Fehtrust.org%2Finternational-actions-to-halt-and-delay-5g%2F>

<sup>3</sup><https://www.vedomosti.ru/technology/articles/2019/03/28/797714-minoboroni-otkazalos-peredavat-5g>

<sup>4</sup><https://www.reuters.com/article/us-swiss-5g/switzerland-to-monitor-potential-health-risks-posed-by-5g-networks-idUSKCN1RT159>

# Scientific Studies: Americans for Safe Technology

<https://www.americansforresponsibletech.org/scientific-studies>

*There are more than 1,000 scientific studies conducted by independent researchers from around the world concerning the biological effects of RF radiation. Here we present some of the most recent.*

- **XI. 5G Effects**
- [Systematic Derivation of Safety Limits for Time-Varying 5G Radiofrequency Exposure Based on Analytical Models and Thermal Dose.](#) Neufeld, E., and Kuster, N. Health Physics Society (2018).
- [Towards 5G Communication Systems: Are There Health Implications?](#) Ciaula, AD. International Journal of Hygiene and Environmental Health 367-375 (2018).
- [5G Wireless Telecommunications Expansion: Public Health and Environmental Implications.](#) Russell, C.L. Environmental Research 165:484-495 (2018).
- [The Human Skin As A Sub-THz Receiver – Does 5G Pose a Danger To It or Not?](#) Betzalel, N., Ishai, P.B., and Feldman, Y. Environmental Research 163:208-216 (2018).
- [The Modeling of the Absorbance of Sun-THz Radiation by Human Skin.](#) Betzalel, N., Feldman, Y., and Ishai, P.B. IEEE Transactions on Terahertz Science and Technology 7(5):521-528 (2017).
- [Human Exposure to RF Fields in 5G Downlink.](#) Nasim, I. and Kim, S. Georgia Southern University (2017).
- [The Human body and Millimeter-Wave Wireless Communication Systems: Interactions and Implications.](#) Wu, T., Rappaport, T., and Collins, C. IEEE International Conference on Communications (2015).
- [State of Knowledge on Biological Effects at 40-60 GHz.](#) Drean, Y., et al. Comptes Rendus Physique (2013).
- [Human Skin as Arrays of Helical Antennas in Millimeter and Submillimeter Wave Range.](#) Feldman, Y., et al. The American Physical Society (2008).
-

# Cyber-Security

**Cybersecurity is the practice of protecting systems, networks, and programs from digital attacks. These cyberattacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users; or interrupting normal business processes.**

**Implementing effective cybersecurity measures is particularly challenging today because there are more devices than people, and attackers are becoming more innovative.**

# Cyber-security – medical devices

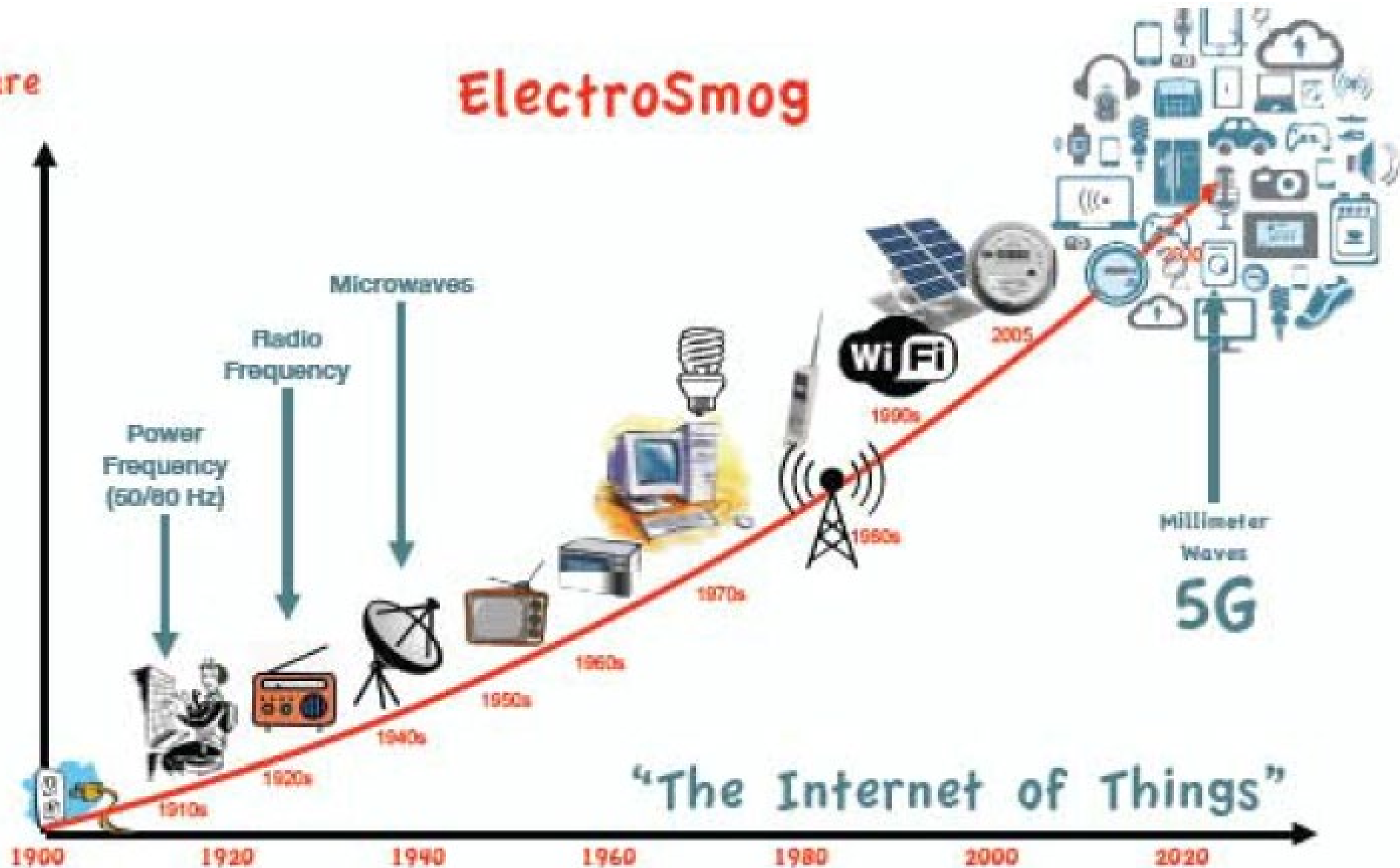
***“Today FDA informs patients, providers and manufacturers about potential cybersecurity vulnerabilities for connected medical devices and health care networks that use certain communication software.”***

US food and Drug Administration: <https://www.prnewswire.com/news-releases/fda-informs-patients-providers-and-manufacturers-about-potential-cybersecurity-vulnerabilities-for-connected-medical-devices-and-health-care-networks-that-use-certain-communication-software-300928921.html>



Exposure

# ElectroSmog



# Source of funding influences results



Environmental Research

Volume 178, November 2019, 108688



## Extremely low frequency electromagnetic fields and cancer: How source of funding affects results

David O. Carpenter ✉

Institute for Health and the Environment, University at Albany, A  
Collaborating Centre of the World Health Organization, 5 University  
Place, Room A 217, Rensselaer, NY, N 12144, USA

### Highlights

- Magnetic field exposure causes childhood leukemia in government-funded studies.
- Magnetic field exposure does not cause childhood leukemia in industry-funded studies.
- Magnetic field exposure increases risk of adult leukemia, brain and breast cancer.
- Steps should be taken to reduce human exposure to elevated magnetic fields.

Phoenix, Arizona USA. Verizon hits 10 5G cities with Phoenix launch

FIERCEwIRELESS <https://www.fiercewireless.com/5g/verizon-hits-10-5g-cities-phoenix-launch>

[AUG 22](#), 2019



# Websites - Canadian

**CANADA**- Canadians for Safe Technology: *C4ST.org*

Canadians Concerned About 5G: *ccw5g.org/*

**ONTARIO** - Kingstonians for Safe Technology: *K4ST.ca*

**BRITISH COLUMBIA**-

- EMR Health Alliance BC: *emrabc.ca*
- Citizens for Safe Technology: *stopsmartmetersbc.com*
- Connected Communities: *connected-communities.ca*

**QUEBEC** - Campagne Stoppons la 5G: *stopponsla5g.ca/campagne*

# Websites - USA

## USA-

- Environmental Health Trust: *ehtrust.org*
- What Is 5G?: *whatis5g.info*
- 5G Crisis: *5gcrisis.com*
- Physicians for Safe Technology: *mdsafetech.org*
- Americans for Responsible Technology:  
*americansforresponsibletech.org*
- 5G Awareness Now: *https:5gawarenessnow.com*

# Petitions

## CANADA:

- Stop 5G from coming to Canada! [\*https://www.change.org/\*](https://www.change.org/)
- Canadians demand a moratorium on 5G until conflict-free research shows us it's safe: [\*change.org/p/justin-trudeau-5g-intense-rf-radiation-demand-a-5g-moratorium-in-canada-until-govt-can-prove-it-s-safe?signed=true\*](https://www.change.org/p/justin-trudeau-5g-intense-rf-radiation-demand-a-5g-moratorium-in-canada-until-govt-can-prove-it-s-safe?signed=true)
- Kingstonians 4 Safe technology: [\*K4ST.ca\*](https://www.k4st.ca)
- Montreal: [\*stopponsla5g.ca/campagne\*](https://www.stopponsla5g.ca/campagne)

## INTERNATIONAL APPEAL

### Stop 5G on Earth and in Space

- - There are 156,281 signatories from 208 nations and territories as of October 1st, 2019
- *We the undersigned scientists, doctors, environmental organizations and citizens from (\_\_) countries, urgently call for a halt to the deployment of the 5G (fifth generation) wireless network, including 5G from space satellites*

# 5G Scientists Appeal

## Scientists and doctors warn of potential serious health effects of 5G

**We the undersigned scientists and doctors recommend a moratorium on the roll-out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry. 5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment.**

