

MP Bill Casey
Chair, Standing Committee on Health
MP - Cumberland — Colchester
Nova Scotia



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Feb. 7, 2019

Dear MP Casey,

As a follow of my email of Nov. 15, 2016 (see Appendix 1) and with the published report of the final results of the US National Toxicology Program rodent- cell phone radiation study¹ we ask that the Parliamentary Health Committee formally request a response from Health Canada regarding these critically important findings and share those findings with interested parties such as C4ST.

In the C4ST meeting with Mr. Tim Singer, Director General, Environmental and Radiation Health Sciences Directorate, Health Canada in late October, 2016, Mr. Singer stated that Health Canada would respond to the NTP Study results, when they were finalized and if Health Canada was asked. He also commented that the request could not come from C4ST.

As you know, Health Canada's Safety Code 6 sets the guidelines for safe human exposure to radiofrequency in the 3 kHz to 300 GHz range. The current guidelines for frequencies used for common wireless devices like cell phones and baby monitors is based solely on thermal effects, that is, it is assumed that if it does not heat, it does not harm.

In June 2016, we provided an overview letter to you and the Parliamentary Health Committee members summarizing the NTP study results and highlighted their significance. Now that the results have been finalized, peer reviewed and published, we believe there is an opportunity for Health Canada to improve the protection of Canadians from the radiation from wireless devices.

A set of recent publications have provided additional solid evidence that harmful effects can also occur at non-thermal levels at, and well below these guidelines and we ask that the HESA committee request a response from Health Canada taking into consideration the following points:

1. "Clear evidence of carcinogenic activity" in Schwann cells in male rats under non-thermal conditions. On November 1st, 2018, the US National Toxicology Program of the National Institute of Environmental Health Sciences (NTP-NIEHS) released the final reports of its 10-year, \$25 million study on cell phone radiation on rodents. Results showed "*clear evidence of carcinogenic activity*".² The NTP

¹ <https://ntp.niehs.nih.gov/results/areas/cellphones/index.html>

² National Toxicology Program, National Institute of Environmental Sciences. (2018). Toxicology and carcinogenesis studies in Hsd: Sprague Dawley SD rats exposed to whole-body radio frequency radiation at a frequency (900 MHz) and modulations (GSM and CDMA) used by cell phones. NTP Technical Report 595, 384. https://www.niehs.nih.gov/ntp-temp/tr595_508.pdf

study was reviewed by a peer review panel of 11 pathologists and toxicologists from academia and industry and one statistician in March 2018.³

Exposures in the NTP study were at Specific Absorption Rates (SAR) of 1.5, 3.0 and 6 W/kg. Canada's Safety Code 6 guideline is 1.6 W/kg, when tested with a separation distance. Exposures in the study were 10 minutes on and 10 minutes off during the lifetime of the exposed group. As you know, many people carry their cell phones next to their bodies (no separation distance) with their devices "on" and so are not getting a 10 minute break in exposure. Also, as reported in the CBC Marketplace TV program, "The Secret Inside Your Phone"⁴, that exposures of some cell phones when carried next to the body, are 3 to 4 times above the SAR guideline, that is, up to 6.4 W/kg.

The NTP-NIEHS study is the third study in less than five years that has shown cancer development in rodents from radiofrequency radiation at non-thermal levels below Safety Code 6 guidelines. An Italian study by Falcioni et al.⁵ at much lower exposure levels, also reported cancer in Schwann cells. A third study conducted by German researchers⁶ tested SAR levels at 0.4 and 4 W/kg. Results, as in the NTP-NIEHS study, showed cancer in a non-linear response.

All of these studies were conducted at non-thermal levels and challenge Health Canada's core assumption in setting limits for human exposure to radiofrequency radiation emitted from cell phones, etc., that only thermal effects can cause harm.

Please also ask Health Canada to take into account the response of Dr. Melnick, the senior scientist, now retired, who clarified to Health Canada that the exposure was in fact as stated 1.5 to 6 W/kg and not as claimed by Director General, Mr. Tim Singer to be "19 to 75 times higher than the human exposure limits established internationally and within Canada for whole body exposure for humans." (Dr. Melnick's response is Appendix 2.)

2. Canadian researchers analyzed and published in 2017, the portion of the Canadian data that was part of the 13 country INTERPHONE study showing a doubling of glioma (cancer in Schwann cells in the brain). The INTERPHONE study was relied on, in part, by the World Health Organization- International Agency for Cancer Research to arrive at a Group 2B *possible* carcinogen classification of radiofrequency radiation in 2011⁷. Canadian data showed that "For glioma, when comparing those in the highest

³ https://ntp.niehs.nih.gov/ntp/about_ntp/trpanel/2018/march/roster_20180328_508.pdf

⁴ https://www.youtube.com/watch?v=Wm69ik_Qdb8

⁵ Falcioni, L., Bua, L., Tibaldi, E., Lauriola, M., De Angelis, L., Gnudi, F., ... Belpoggi, F. (2018). Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission. *Environmental Research*. <https://doi.org/10.1016/j.envres.2018.01.037>

<https://www.ncbi.nlm.nih.gov/pubmed/29530389>

⁶ Lerchl, A., Klose, M., Grote, K., Wilhelm, A. F. X., Spathmann, O., Fiedler, T., ... Clemens, M. (2015). Tumor promotion by exposure to radiofrequency electromagnetic fields below exposure limits for humans. *Biochemical and Biophysical Research Communications*, 459(4), 585–590. <https://doi.org/10.1016/j.bbrc.2015.02.151>
<https://www.ncbi.nlm.nih.gov/pubmed/?term=Tumor+promotion+by+exposure+to+radiofrequency+electromagnetic+fields+below+exposure+limits+for+humans.+Biochemical+and+Biophysical+Research+Communications%2C>

⁷ Baan, R., Grosse, Y., Lauby-Secretan, B., El Ghissassi, F., Bouvard, V., Benbrahim-Tallaa, L., ... WHO International Agency for Research on Cancer Monograph Working Group. (2011). Carcinogenicity of radiofrequency electromagnetic fields. *Lancet Oncology*, 12(7), 624–626. [https://doi.org/10.1016/S1470-2045\(11\)70147-4](https://doi.org/10.1016/S1470-2045(11)70147-4)
[https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(11\)70147-4/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(11)70147-4/fulltext)

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)".⁸ A doubling of glioma brain cancer would mean about 8,000 Canadians per year could develop preventable gliomas.

In the interest of the health and safety of Canadians, that Prime Minister Trudeau has said is his government's highest priority, would you please ask:

1. Mr. Tim Singer, Director General, Environmental and Radiation Health Sciences Directorate, Health Canada for a response to the above points

and

2. The Public Health Agency of Canada responsible for the prevention of harm from radiation, for a response as to what actions they are taking to inform Canadians that their exposures to radiation from wireless devices, particularly cell phones, could double their risk of developing glioma brain cancer. Also, what other actions is it taking, or considering taking, to prevent increased risk of harm to Canadians.

We will be calling your office to follow up on our request and would be pleased to meet with you to review this material and provide further supporting information.

I would appreciate a response to this letter by Feb. 21, 2019.

Sincerely,



Frank Clegg
CEO,
Canadians for Safe Technology (C4ST)
frank@c4st.org

cc: HESA Committee members
C4ST Board of Directors

⁸ Momoli, F., Siemiatycki, J., McBride, M. L., Parent, M.-É., Richardson, L., Bedard, D., ... Krewski, D. (2017). Probabilistic multiple-bias modelling 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*. <https://doi.org/10.1093/aje/kwx157>
<https://www.ncbi.nlm.nih.gov/pubmed/?term=momoli+problemistic+cell+phone+interphone>

Appendix 1

From: Frank Clegg [<mailto:frank@c4st.org>]

Sent: Tuesday, November 15, 2016 7:51 PM

To: Bill.Casey.A2@parl.gc.ca

Cc: Bill.Casey.A1@parl.gc.ca

Subject: RE: Response of the Government to HESA Report 2 (42nd Parliament)

Hello Joel,

Thank you for your quick response. We had a meeting with the new Director General, Environmental and Radiation Health Sciences Directorate, Health Canada in late October and I wanted to hold my response until that meeting.

We understand and respect that HESA has a full agenda. Mr. Casey made that point in our meeting March 10, 2016. In fact he stated there are 14 priority items that involve four years of work.

Mr. Casey made two points that I think are relevant. The first point was also made in my meetings with INDU Chair MP Dan Ruimy and with Finance Committee Chair MP Wayne Easter. Prime Minister Trudeau, unlike his predecessor, set up the committees to be truly independent and to act on behalf of Canadians and to step in when required.

The second point raised by Mr. Casey was that, in his 28 years of experience on the Hill, he had three observations. The first and most relevant in this case, is that “nothing goes as planned.”

We believe that Minister Philpott, due to her very full agenda, must not have had the time to examine fully her October 6th response to the 2015 HESA report and accepted Health Canada's input as authoritative and at face value. We are convinced that if the Minister had investigated the underlying reasons for the recommendations, including follow up with the HESA witnesses, she would have insisted on stronger implementation of the recommendations. A detailed examination by C4ST will follow but in the interim, we are fortunate that three of the HESA witnesses, Dr. Meg Sears, Dr. Anthony Miller and Dr. Devra Davis have agreed to be available to meet, individually or together, with MP Casey. Their credentials are at the end of this letter. A person to person meeting would allow MP Casey to ask questions of some of the top experts in the field of RF radiation and human health. The points which could be discussed include:

1. Incomplete scientific database and flawed evaluation of relevant studies.

- HESA 2015 Recommendation 10: *"That Health Canada conduct a comprehensive review of all existing literature relating to radiofrequency fields and carcinogenicity based on international best practice."* The Health Canada October 6th response states: *"the Department will consider various strategies for further supporting transparency in the process including implementation of an enhanced process for systemic review...."* In our meeting with Director General Tim Singer, he stated Health Canada had not decided what framework of review and communication it was planning to use. The original HESA Report was tabled in June, 2015. Health Canada has had 16 months. International experts who specialize in the systematic review of scientific evidence gave Health Canada an “F” in their process.
- Health Canada states, *"While some studies have reported health effects below Canadian and international safety limits the **totality of the scientific evidence** does not support the link between radiofrequency electromagnetic fields (RF EMF) and health effects."* This new term, “totality of the scientific evidence” represents an unprecedented high bar for proof, suggesting that unanimity is necessary. With well known industry tactics such as "doubt is our product" and “generation of doubt” as seen with tobacco, asbestos and other carcinogenic agents, the totality of the evidence will never point in a single direction. This apparent requirement for all research to be consistent causes more confusion and concern regarding Health Canada’s scientific processes and decision-making.
- It is true, nonetheless, that *all* of the evidence must be considered. Health Canada excludes studies conducted using devices such as cell phones, citing problems with signal characterization. The "design" of Safety Code 6 and other international standards, to which it refers, is (for radio-telecommunications) based only on temperature related data, and no other effects, in its calculations. All of the non-thermal effects

literature is swept away as not being "convincing". Based on our experts' review of what information is available from Health Canada, it appears that Health Canada disregards all published peer-reviewed papers that show harm at levels below Safety Code 6 including those that involve a specific device. While there may be challenges incorporating this research in standards setting, evidence of hazards from harms resulting from defined operations using commercial devices is compelling evidence that the current Safety Code 6 guidelines are too permissive. It goes against all common scientific standards, indeed against common sense, to simply ignore this evidence. How is it that all of the studies showing harm below international standards are disregarded? As you must know, these studies number in the hundreds, if not in the thousands. Hard to believe, but true.

2. Lack of counter-balancing opinions: Health Canada has an apparent systemic bias to exclude studies showing harm that are not thermal (i.e. cause heating). Health Canada appears to have a built-in bias towards maintaining the current levels of Safety Code 6. All the publications listed by Health Canada on its website, <http://www.hc-sc.gc.ca/ewh-semt/radiation/cons/radiofreq/research-recherche-eng.php> show no harm from RF radiation. We cannot find any counter-balancing opinion on the potential harmful effects of RF radiation on its website or in materials released to defend Safety Code 6. Input from the scientists who peer-reviewed the Royal Society report recommending that specific skills be added to Health Canada's capabilities, was disregarded.

3. New compelling evidence since tabling of the 2015 HESA report supports strong precautionary measures such as in Recommendations 8 and 9, particularly with regard to children. The Health Canada response states: "Health Canada officials carry out an ongoing review of emerging scientific studies in this area. If new scientific evidence were to demonstrate that exposure to RF energy below levels found in Safety Code 6 from wireless technologies is a concern, the Government would take appropriate action to help protect the health and safety of Canadians." Since the report was tabled, dozens of peer-reviewed studies have been published showing harm at levels below Safety Code 6. A recent paper summarized 100 recent peer-reviewed *in vitro* and *in vivo* experimental studies at non-thermal RF radiation exposure levels and found that 93 reported significant oxidative biological activities. <https://www.ncbi.nlm.nih.gov/pubmed/26151230>. What process does Health Canada use to evaluate this evidence? Why are these studies not enough to trigger improvements in Safety Code 6? The last dated reference Health Canada provides in the response is the IARC review in 2011.

This is a subset of some of the issues and questions that MP Casey may want to raise. These same questions have been raised by Canadian MDs and the international scientific community regarding Safety Code 6 and Health Canada's process to review the scientific evidence.

We are asking MP Casey for a 30 minute meeting with any or all of the three experts below so he can understand first-hand, how unscientific Health Canada's process is. The three experts all testified to the 2015 HESA committee. We are fortunate that Dr. Davis is in Ottawa for personal reasons until Nov. 22, 2016. Dr. Sears lives in the Ottawa area and Dr. Miller lives in Port Hope ON, so their calendars are more flexible.

Our request for the meeting is to provide high quality information to MP Casey as to how the HESA committee can assist Minister Philpott to improve the protection of Canadians from the harmful effects of wireless devices and to use them more safely as well as to provide the opportunity for MP Casey to personally ask probing questions.

I would like to leave you with a final thought: *"Brain tumours are now the leading cancer in American adolescents, and incidence is rising in young adults according to the largest most comprehensive analysis^[1] of these age groups to date. Dr. Jacob Easaw, then from the Tom Baker Cancer Centre in Calgary: 'The astounding increases reported in this study, especially in young people, mirror what I am seeing in my clinic. Canada is in the process of establishing a comparable brain tumour registry, so these analyses will not be available here for 15 or 20 years. I am increasingly convinced that mobile phones are a major cause, and urgent action is needed.'*"^[2] Australian brain

^[1] Ostrom, Q.T., et al. (2016). American Brain Tumor Association Adolescent and Young Adult Primary Brain and Central Nervous System Tumors Diagnosed in the United States in 2008-2012. *Neuro-Oncology* 18.Suppl. 1. i1-50. First Author Affiliation: Case Comprehensive Cancer Center, Case Western Reserve University School of Medicine, Cleveland, OH USA; **Central Brain Tumor Registry of the United States**, Hinsdale, IL USA.

^[2] <http://www.preventcancer.org/brain-tumours-now-leading-form-of-cancer-in-adolescents>

^[2] Reuter et al. (2010). Oxidative stress, inflammation and cancer: How are they linked? *Free Radic Biol. Med.* 49 (11):1603-1616.

surgeons, Dr. Vini Khurana and Dr. Charles Teo have stated they believe there is a direct causal link between brain cancers and mobile phone use.^[3]

Is it not time to listen to and ask some hard questions of the experts who have offered their time so that this issue is given the attention needed to avert a potential major public health care crisis?

Dr. Meg (Margaret) Sears M.Eng., Ph.D.

Past-Adjunct Investigator, Children's Hospital of Eastern Ontario, and past-Research Institute and Senior Clinical Research Associate, Ottawa Hospital Research Institute; Expert in systematic scientific literature reviews to international best practices.

Dr. Anthony Miller MD

Professor Emeritus, Dalla Lana School of Public Health, University of Toronto; Reviewed the bibliography for Monograph 80 of WHO, IARC in its determination of wireless radiation as a Class 2B human carcinogen.

Dr. Devra Davis Ph.D., M.P.H.

Founded the Center for Environmental Oncology of the University of Pittsburgh Cancer Institute, 2005-2010; Has published in the peer-reviewed journals, including on the under-estimation of cell phone radiation in children; Fellow American College of Epidemiology, President, Environmental Health Trust, Visiting Prof. Hebrew Univ. Hadassah Medical Center & Ondokuz Mayis Univ. Medical School, Associate Editor, Frontiers in Radiation and Health; Nobel co-Laureate award recipient as the Lead Author of the Intergovernmental Panel on Climate Change (Al Gore, 2007); Has authored more than 200 books (the most recent Disconnect) and articles that have been translated into more than a dozen languages. Served as an advisor to the World Bank and the World Health Organization.

Thank you for your ongoing attention to our concerns. Thx...f

Frank Clegg
CEO



Canadians For Safe Technology

Keep your family safe from wireless radiation – See how at www.C4ST.org

<http://www.facebook.com/c4st.org>

From: Bill.Casey.A2@parl.gc.ca [<mailto:Bill.Casey.A2@parl.gc.ca>]

Sent: Tuesday, October 18, 2016 11:47 AM

To: frank@c4st.org

^[2] Dasdag, S., & Akdag, M. Z. (2015). The link between radiofrequencies emitted from wireless technologies and oxidative stress. *Journal of Chemical Neuroanatomy*. doi:10.1016/j.jchemneu.2015.09.001;

^[3] <https://www.youtube.com/watch?v=mMKwtjO73Y8>

Cc: Bill.Casey.A1@parl.gc.ca

Subject: Response of the Government to HESA Report 2 (42nd Parliament)

Mr. Clegg,

I understand that you are dissatisfied with the Government response to HESA Report 2. As you are aware, this was a report of the predecessor committee in the 41st Parliament, which the previous government chose to ignore. The committee in its current instantiation chose to bring it forward to the current government, ensuring that the work of the predecessor was not wasted. We appreciate the government's timely response.

The Health Committee in this 42nd Parliament has a busy agenda. Its study of national pharmacare is presently paused while it studies the urgent health crisis posed by opioid abuse in Canada. Several other significant topics of concern to Canadians wait in the wings for their due attention. There will not be an opportunity in the foreseeable future for the committee to undertake further study of the subject matter dealt with in Report 2.

Best regards,

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Appendix 2

From: Ron Melnick [<mailto:ron.melnick@gmail.com>]

Sent: Thursday, January 04, 2018 5:04 PM

To: Minister_Ministre@hc-sc.gc.ca; Ginette.PetitpasTaylor@parl.gc.ca

Subject: Statement from Health Canada re NTP study

The Honourable Ginette Petitpas Taylor, M.P., Minister of Health

It has come to my attention that in response to inquiries about Safety Code 6 regarding guidelines for "safe human exposure" to radiofrequency (RF) radiation, Tim Singer (Director General, Environmental and Radiation Health Sciences Directorate) has grossly misrepresented the brain cancer risk associated with the whole-body exposures used in the US National Toxicology Program (NTP) study of cell phone radiation. Because I was the lead scientist for the design of the NTP study, I feel obligated to clarify any misunderstandings of the design and utility of the NTP study for assessing any human health risks.

Tim Singer wrote:

“Please be assured that Health Canada is aware of the work of the US National Toxicology program and has reviewed the study report which states that there was a statistically significant increase in certain types of cancer among males rats exposed to cell phone signals over two years. The RF exposure levels tested in the study were 19 to 75 times higher than the human exposure limits established internationally and within Canada for whole body exposure for humans.”

I believe it is important for Health Canada to understand why this statement misrepresents risk to the brain from the whole-body exposures used in the NTP study. While the exposure limit to RF radiation in the US is 0.08 W/kg averaged over the whole body, the localized exposure limit is 1.6 W/kg averaged over any one gram of tissue. Body tissues located nearest to the cell phone antenna receive much higher exposures than tissues located distant from the antenna. Thus, when an individual uses a cell phone and holds it next to his or her head, exposure to the brain will be much higher than exposures averaged over the whole body. When considering organ-specific risk (e.g., risk to the brain) from cell phone RF, the important measure of exposure is the SAR value of 1.6 W/kg averaged over any gram of tissue. In the NTP study in which animals were exposed to whole-body RF at SARs of 1.5, 3, and 6.0 W/kg, exposures in the brain were within 10% of the whole-body exposure levels. Therefore, in the NTP study, exposure intensities in the brain of rats were similar to or only slightly higher than localized human exposures from cell phones held next to the head.

In addition, I was also a member of the IARC panel in 2011 that classified RF EMF as possibly carcinogenic to humans based largely on limited evidence of carcinogenicity (increased risks of gliomas and acoustic neuromas) in humans. The IARC classification and category of evidence does not imply that human exposures are safe, rather, it means “a positive association has been observed between exposure to the agent and cancer for which a causal interpretation is considered by the IARC Monographs Working Group to be credible, but chance, bias or confounding could not be ruled out with reasonable confidence.”

I hope my comments have clarified some important points about cell phone RF radiation.

Sincerely,

Ronald L. Melnick, Ph.D.