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August 3, 2015

Senator Karen E. Spilka  
Representative Carolyn Dykema  
Andrea Pessolano

Massachusetts State House  
Boston, MA 02133

RE: Supplementary Material for [\*\*MA S. 1222: An Act creating a special commission to study the health impacts of electromagnetic fields\*\*](#)

Dear Senator Spilka, Representative Dykema and Andrea Pessolano,

Thank you for your consideration of this legislation and the research supporting it. There have been many attempts by the industry to discredit the science. However, in light of the growing experimental literature on EMFs and health, it is important to review and study these impacts. I was honored to speak to the Massachusetts legislature on June 10, 2015 with the intent to provide enough scientific evidence for you to consider adopting right to know legislation for cell phones and wireless devices. Please watch highlights from the proceedings at <https://vimeo.com/134411701>.

In addition to the materials we sent earlier in July for the hearing, we would like to provide supplementary information. We recognize that for those first learning the health risks associated with wireless devices, the amount of information available can be overwhelming so I would like to highlight some of the most important issues.

Current federal exposure limits for radiofrequency electromagnetic radiation (RF-EMF, which includes cell phone and wi-fi technologies) were established nearly 30 years ago based on outdated thermal standards. Most of the public is unaware that cell phones are tested at a distance from the body and there are instructions in the manual detailing this. Wireless devices such as laptops are tested at a distance of more than 8 inches from the body and yet they are being used on laps, directly next to growing young bodies—creating exposures far in excess of the as-tested levels. The United States has come under sharp criticism by the [GAO](#), the [American Academy of Pediatrics](#), the [US Department of the Interior](#), and research scientists from around the world for relying on outdated standards.

The FCC is currently reviewing exposure standards and has received hundreds of submissions detailing public health concerns with the current regulations ([Proceeding 13-84](#), 2013). In 2013, the American Academy of Pediatrics [wrote to the Federal Communications Commission](#) calling for more protective

radio-frequency exposure standards and stated, “*Children are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children.*” I should also note that the American Academy of Pediatrics supported H.R. 6358 National Right To Know legislation in 2012 and I have attached their letter for your review.

Yale University Chairman of Obstetrics/Gynecology, Hugh Taylor, PhD, MPH, and I have been working with physicians and experts in developmental biology as part of [the BabySafe Project](#) creating materials for health professionals and pregnant women in order to promote awareness of the need to reduce exposures to cell phones and other sources of wireless radiation.

Biological effects have been shown to occur at radiation levels far below the FCC public exposure guideline level. There is a significant emerging body of evidence indicating that wireless radiation increases the risk of cancer and impairs the function of healthy cells in the immune system, as well as impact gene and protein expression, cell signaling, oxidative stress, cell death, the blood-brain barrier and brain activity.

A number of countries around the world have already taken steps to reduce the levels of wi-fi radiation in schools. France just passed a national law banning wifi from nursery schools and mandating that schools turn the wifi off when not in use to minimize radiation exposures onto the children. Government agencies in Russia, India, Australia and Belgium recommend that children’s wireless exposures be minimized and that citizens take specific precautions with children’s use of cellphones and wireless devices.

Please consider this recently published scientific information.

- 2011: The World Health Organization’s International Agency for the Research on Cancer (IARC) [classifies](#) Radiofrequency Radiation as a Class 2 B Carcinogen, a possible human carcinogen. The IARC issued their [Monograph](#) in April 2013 detailing the basis of the classification. Note that other 2 B carcinogens such as lead and DDT are subject to serious regulatory control and restriction on school properties, and wi-fi should be too.
- 2011: Written by Yale University Senior Faculty, Environment and Human Health Inc. released “[Cell Phones: Technology, Exposures, Health Effects](#)” calling for reduced exposures and protective standards.
- Several studies have found that wireless radiation can damage both the male and female reproductive systems: Adams (2014), Avendaño et al. (2012), De Iuliis et al. (2009), Fejes et al. (2005), Agawal et al. (2008), Wdowiak et al. (2007), Gul et al. (2009), Atasoy et al. (2013), Naziroğlu et al. (2013), Panagopoulos (2012) and Gutschi et al. (2011).
- Several studies also indicate important changes in brain activity and neurotoxic effects: Aldad et al. (2012), Cetin et al. (2014), Júnior et al. (2014), Odaci et al. (2008), Qiao et al. (2014), Bas et al. (2009), Naziroğlu and Gumral (2009), Megha et al. (2012), Bin et al. (2013), Jing et al. (2012), Razavinasab et al. (2014), Volkow et al. (2011) and Ikinici et al. (2013).
- A recent case [study](#) by breast cancer surgeons found a link to unusual breast tumors in young women who keep cell phones in their bras and have no genetic markers for the disease: West et al. (2013).

We are especially concerned by the fact that the public is not fully aware of the health and safety issues wireless devices present. For example, iPads and tablets have at least four antennas emitting digital pulsed radiation 900 times per hour. Operating systems include [fine print warnings](#) recommending that the cellular antennas be directed “away from the body and other objects.” As another example, laptops are tested at 20 cm (about 8 inches) from the body and use on laps could result in radiation exposures over the FCC limits. Such important information is buried in the fine print of manuals.

As some of you may know, Harvard Law Professor Lawrence Lessig is a First Amendment expert, and he has helped write a cell phone ordinance unanimously approved in May 2015 by Berkeley, CA. Adopting similar language in Massachusetts would allow citizens to know at the point of purchase they should not keep cell phones and wireless devices on their bodies. This would be an important first step allowing us to protect our citizens immediately, while your esteemed committee investigates the full issue and makes further recommendations.

I have attached the following documents:

1. A Full briefing on the health risks of wireless to children.
2. A Briefing on legislative efforts in the United States and Worldwide.
3. Materials from the BabySafe Project detailing Doctor’s recommendations.
4. A Briefing on the Berkeley California Cell Phone Ordinance
5. The Letter from the American Academy of Pediatrics supporting the Cell Phone Right to Know Act

My hope is you will heed the recommendations of the non-industry funded scientists who have done the research, and act swiftly as our citizens deserve a right to know immediately about the manufacturer's warnings and risks that come with using cell phones and wireless devices. I am available to speak with you at any time to discuss this further. While I am located in Wyoming, I have met via Skype with other stakeholders and would be pleased to do so with you as well if I can be of further service.

Sincerely,

Devra Davis, PhD, MPH  
Nobel Peace Prize Co-Laureate with Al Gore and hundreds of scientists on the Intergovernmental Panel on Climate Change, 2007  
Environmental Health Trust  
President and Founder

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Adams J, Galloway T, Mondal D, Esteves S, Mathews F.(2014). [Effect of mobile telephones on sperm quality: A systematic review and meta-analysis](#). *Environment International*. 80, 106-112.

Aldad T, Gan G, Gao X, Taylor H. (2012). [Fetal Radiofrequency Radiation Exposure From 800-1900 Mhz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice](#). *Scientific Reports*.

- Agarwal A, Deepinder F, Sharma R, Ranga G. (2008). [Effect of cell phone usage on semen analysis in men attending infertility clinic: an observational study.](#) *Fertil Steril.* 89(1), 124-8.
- Atasoy H, Gunal M, Atasoy P, Elgun S, Bugdayci G. (2013). [Immunohistopathologic demonstration of deleterious effects on growing rat testes of radiofrequency waves emitted from conventional Wi-Fi devices.](#) *Journal of Pediatric Urology.* 9(2), 223-9.
- Avendaño C, Mata A, Sanchez C, Doncel G. (2012). [Use of laptop computers connected to internet through Wi-Fi decreases human sperm motility and increases sperm DNA fragmentation.](#) *Fertility and Sterility.* 97(1), 39-45.
- Bas O, Odaci E, Mollaoglu H, Ucock K, Kaplan S. (2009). [Chronic prenatal exposure to the 900 megahertz electromagnetic field induces pyramidal cell loss in the hippocampus of newborn rats.](#) *Toxicol. Ind. Health.* 25, 377-384.
- Cetin H, Nazıroğlu M, Celik O, Yüksel M, Pastacı N, Ozkaya MO. (2014). [Liver antioxidant stores protect the brain from electromagnetic radiation \(900 and 1800 MHz\)-induced oxidative stress in rats during pregnancy and the development of offspring.](#) *J Matern Fetal Neonatal Med.*
- De Iuliis G, Newey R, King B, Aitken R. (2009). [Mobile phone radiation induces reactive oxygen species production and DNA damage in human spermatozoa in vitro.](#) *PLoS One.* 4(7)
- Fejes I, Zavaczki Z, Sollosi J, Koloszar S, Daru J, Kovacs L, Pal A. (2005). [Is there a relationship between cell phone use and semen quality?](#) *Arch Androl.* 51(5), 385-93.
- Gul A1, Celebi H, Uğraş S.(2009). [The effects of microwave emitted by cellular phones on ovarian follicles in rats.](#) *Arch Gynecol Obstet.* 280(5), 729-33.
- Gutsch T, Mohamad Al-Ali B, Shamloul R, Pummer K, Trummer H. (2011). [Impact of cell phone use on men's semen parameters.](#) *Andrologia.* 43(5), 312-6.
- Ikinci A, Odaci E, Kaya H, Akca M, Hanci H, Alsan A. (2013). [The Effects of Prenatal Exposure to a 900 Megahertz Electromagnetic Field on Hippocampus Morphology and Learning Behavior in Rat Pups.](#) *NeuroQuantology.* 11(4), 582-590.
- Jing J, Yuhua Z, Rongping J, Xiao-qian Y, Dong-mei G, Xi C. (2012). [The influence of microwave radiation from cellular phone on fetal rat brain.](#) *Electromagn Biol Med.* 31(1), 57-66.
- Lv B, Chen Z, Wu T, Shao Q, Yan D, Ma L, Lu K, Xie Y. (2013). [The alteration of spontaneous low frequency oscillations caused by acute electromagnetic fields exposure.](#) *Clinical Neurophysiology.*
- Nazıroğlu M, Yüksel M, Köse SA, Özkaya MO. (2013). [Recent reports of Wi-Fi and mobile phone-induced radiation on oxidative stress and reproductive signaling pathways in females and males.](#) *J Membr Biol.* 246(12), 869-75.
- Odaci E, Bas O, Kaplan S. (2008). [Effects of prenatal exposure to a 900 megahertz electromagnetic field on the dentate gyrus of rats: a stereological and histopathological study.](#) *Brain Res.* 1238, 224-229.
- Panagopoulos DJ. (2012). [Effect of microwave exposure on the ovarian development of Drosophila melanogaster.](#) *Cell Biochem Biophys.* 63(2), 121-32
- Qiao S, Peng R, Yan H, Gao Y, Wang C, Wang S, Zou Y, Xu X, Zhao L, Dong J, Su Z, Feng X, Wang L, Hu X. [Reduction of Phosphorylated Synapsin I \(Ser-553\) Leads to Spatial Memory Impairment by Attenuating GABA Release after Microwave Exposure in Wistar Rats.](#) *PLoS One.* 17, 9(4).
- Razavinasab M1, Moazzami K, Shabani M. (2014). [Maternal mobile phone exposure alters intrinsic electrophysiological properties of CA1 pyramidal neurons in rat offspring.](#) *Toxicol Ind Health.*
- Volkow ND, Tomasi D, Wang GJ, Vaska P, Fowler JS, Telang F, Alexoff D, Logan J, Wong C. (2011). [Effects of cell phone radiofrequency signal exposure on brain glucose metabolism.](#) *JAMA.* 305(8), 808-13.

Wdowiak A, Wdowiak L, Wiktor H. (2007). [Evaluation of the effect of using mobile phones on male fertility](#). *Ann Agric Environ Med.* 14(1), 169-72.

West JG, Kapoor NS, Liao S, Chen JW, Bailey L, Nagourney RA. (2013). [Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones](#). *Case Reports in Medicine*. Volume 2013, Article ID 354682.