

**Recommendations to the Maryland Children's Environmental Health and Protection Advisory  
Council on the Children's Health and Radiofrequency Exposures Report**

Clifford S. Mitchell, M.D.  
Maryland Children's Environmental Health and Protection Advisory Council  
Rachel M. Hess-Mutinda  
Maternal & Child Health Bureau  
Prevention & Health Promotion Administration,  
Dept. of Health & Mental Hygiene  
Herbert R. O'Connor State Office Building,  
201 West Preston St.,  
Baltimore, MD 21201 - 2399

November 10, 2016

Dear Dr. Clifford S. Mitchell;

We are writing you in strong support of the Maryland Children's Environmental Health and Protection Advisory Council's draft recommendations to reduce children's exposure to radiofrequency radiation. We offer this information and our recommendations to include in your final report.

**Children and Radiofrequency Radiation**

Radiofrequency radiation constitutes a significant environmental exposure for children in schools and at home. Schools are rapidly integrating cell phones and wireless technology into classrooms. The radiofrequency electromagnetic (RF--EMF) radiation environment in classrooms is significant because of the high numbers of radiation emitting devices (laptops, tablets, cell phones, ceiling mounted access points, virtual reality) in use for long periods of time in each classroom.

As the [US EPA has detailed](#), FCC regulations were set intending to protect from thermal effects only and not intending to protect from non-thermal effects from long-term chronic exposures. Since, the World Health Organization's International Agency for the Research on Cancer classified radiofrequency radiation as a [Class 2 B Carcinogen in 2011](#), evidence has [significantly increased](#) that long-term radiofrequency radiation exposure causes cancer. It has been scientifically demonstrated that adverse biological effects can occur at non-thermal levels of radiofrequency fields. A recent animal study performed by the [National Toxicology Program](#) in the United States found an increased incidence of cancer and increased DNA damage in rats with prolonged exposure to radiofrequency fields that were too weak to increase temperature. Importantly, these adverse effects (and other effects now well documented in scientific literature) occurred at levels below those that cause "thermal" injury, contrary to what had long been espoused by the FCC. Therefore, FCC regulations do not provide adequate protection for children as the regulations do not account for biological effects at these *non-thermal* levels.

The [American Academy of Pediatrics](#) (AAP) - in response to the NTP results- now recommends that children's exposure to cell phone is reduced and specifies steps parents can take to reduce exposure such

as “*Make only short or essential calls on cell phones*” and “*Avoid carrying your phone against the body like in a pocket, sock, or bra.*” because “*Cell phone manufacturers can’t guarantee that the amount of radiation you’re absorbing will be at a safe level.*”

The AAP has long called on the federal government to [inform the public](#) and to [strengthen](#) FCC limits because children are more vulnerable to radiofrequency radiation exposures due to their unique anatomy and physiology, and rapid development. Considering that children will have a lifetime of exposure, it is critically important to reduce childhood RF exposures in schools and homes and equally important to address the myriad of ways children are exposed be it from Wi-Fi, tablets and/or cell phones.

Consistent with these expert recommendations we make the following recommendations to the State of Maryland. We also are commenting to the The Maryland Children's Environmental Health and Protection Advisory Council whose [Committee on Wireless and Health has drafted Guidelines of which we are adding these recommendations.](#)

### **Recommendations to the Department of Health**

The Department of Health should advise the public on ways to reduce radiofrequency exposure from cell phones and wireless devices, with special emphasis on protecting children.

Please see these examples of experts who have issued specific recommendations to reduce exposure:

- **The Connecticut Department of Health:** “*It is wise to reduce your exposure to radiofrequency energy from cell phones whenever possible.*” [Read the Connecticut Department of Public Health Cell Phone Q and A about Cell phones here.](#)
- **Massachusetts Department of Public Health:** “*Consider a wired Local Area Network (LAN) instead of wireless, and wired connections to computers and other individual devices. Use a wired landline instead of a cell phone for everyday calls. --Limit children’s use of cell phones except for emergencies.*” [“Best Practices for Technology” by Dr. Robert S. Knorr, Director, Environmental Epidemiology Program, Bureau of Environmental Health.](#)
- **American Academy of Pediatrics:** *10 Safety Tips for Parents* [Read their Recommendations to Reduce Exposure to Children](#)

The Maryland Department of Health should create and maintain a webpage with information on how to reduce cell phone and wireless device exposure, just as the [Connecticut Department of Health](#), the [Massachusetts Bureau of Environmental Health](#) and [San Francisco](#) and [Burlingame](#), California have done.

Note: The governments of France, Belgium, Canada, Austria, the United Kingdom (UK) , India, Australia, Germany, Switzerland, Israel, Finland, Greece, Russia, Switzerland, Cyprus, Singapore, Turkey and the Council of Europe all have online [public resources](#) specifically recommending that children’s exposure should be reduced or minimized, and governments provide resources detailing how the public can reduce exposure to radiofrequency radiation. As the UK ministry states, “*Government advice is to be on the safe side and limit mobile phone use by children.*”

Countries such as France, Israel, Germany, and the state and local governments of Ghent Belgium, Navarra, Vitoria, and the Basque Parliament of Spain, South Tyrol Borgofranco d'Ivrea, Piemonte and Turin Italy, specifically recommend against Wi-Fi or have outright banned Wi-Fi in daycare centers, kindergartens and/or schools. When the plan to recommend the removal of Wi-Fi from all Haifa Israel schools was announced, Haifa Mayor Yona Yahav was quoted stating, *“When there is a doubt, when it comes to our children, there is no doubt.”*

**The Department of Health should provide resources that inform doctors and other clinicians about advising patients how to reduce cell phone/Wi-Fi exposure *and* how to clinically assess Radiofrequency (RF) exposure during patient visits.** The Department of Health can create a Factsheet for Parents and a Factsheet for Clinicians that includes interview questions to ask during patient visits.

**The Department of Health should provide information to obstetricians and gynecologists so they can** provide information to patients about how to reduce exposures during clinic visits. Please see [the BabySafe Project](#) for examples of resources to share with pregnant women.

### **Recommendations to Schools**

#### **Reduce Radiofrequency Field Technology ALARA (As Low As Reasonably Achievable)**

In order to reduce classroom RF exposures schools should install Low RF-EMF technology and reduce radiofrequency radiation exposures according to ALARA (As Low As Reasonably Achievable) principles. To reduce children’s RF exposure in classrooms, schools should:

- Install corded (non-wireless) LAN systems in classrooms so that teacher and student computers (portable and desktop) connect to the internet without the added RF radiation exposure associated with wireless.
- Ensure the wireless emissions are disabled on devices in use by students.
- Install corded (not cordless) telephones in all classrooms for voice communication and security. This enables emergency calls to be received without either the radiation – or distraction from classwork – associated with cell phone use in the class.
- Choose non-wireless options for all other technology communication such as printers, security, mouse, keyboard, video cameras, HVAC, speakers, headphones, microphones and other accessories.
- Include information on FCC fine print warnings in the Bring Your Own (Mobile) Device (BYOD) Policy.
- Provide adaptors and accessories for personal devices so that devices can be used without wireless radiation emissions in classrooms when needed as classroom tools.
- Post reminder notices in classrooms instructing device users to turn off Wi-Fi, Bluetooth, and any other wireless settings on devices and accessories that connect non-wirelessly (even if they are purses or bags).
- Prohibit cell towers near and on school buildings and grounds.

### **Educational Curriculum for Schools**

- Teach student and teachers *why* and *how* to reduce radiation exposure from cell phones and technology devices as part of digital citizenship curriculum for students and for staff training.
- Offer educational workshops for parents to learn how to decrease cell phone and wireless device RF exposures at home.
- Post cell phone/wireless device RF reduction “Best Practices” in every classroom.

### **Partial RF Reduction Measures in Schools**

The following measures are not fully protective but only provide a *partial* reduction in radiation exposure. *However, fully wired (non-wireless) systems will eliminate the RF exposure from school technology. With partial or half-measures, children will continue to be exposed to significant RF radiation emitted by wireless devices and by all the building’s access points (which transmit radiation continuously) whether exposed as users or bystanders.*

- Ensure all computers, tablets and laptops are used on a table and NOT on a student’s lap.
- Ensure students’ heads and bodies are at maximum distance from all wireless devices (e.g., children should not lie on the floor with their heads inches from the laptop screen, nor should the lid of the computer behind them be near their back or head.)
- Install a switch for the teacher to turn Wi-Fi routers and access points OFF in classrooms when not in use.
- Plan for wireless download of applications and content onto devices to occur *outside of* school hours. Therefore during the school day the device will be fully loaded and the device’s Wi-Fi antennae (and WiFi router or access point) can be turned off while children are using devices.
- Allow students who want to avoid RF to use ethernet and other corded connections for their computers. Most classrooms *already* have an ethernet port on the wall to plug into. (Note: if a child is using an ethernet connected computer but is sitting in close proximity to a child on Wi-Fi or is sitting in front of a child using WiFi then the ethernet using child will still be getting radiation exposures from the nearby WiFi users in addition to the Wi-Fi access point.)
- Ensure that the wireless antennas are always OFF on cell phones and BYOD Devices.

*Note: In several school districts some grades use digital devices in most of their academic classrooms and, thus, partial halfway reductions such as "turn it off when not in use" will have minimal protective impact as the devices are "in use" for several hours each day. **Therefore, our recommendations and the most effective means to reduce exposure for maximum protection is to ensure the school infrastructure is 100% hardwired with ethernet connections.***

### **Manufacturer's Instructions in Cell Phones and Wireless Devices**

As digital devices are used as classroom tools (and for homework at home) the Department of Education should ensure that students and staff are aware of the FCC instructions of devices.

- Students and staff should be informed that wireless devices emit RF radiation and that the device manual specifies separation distances that are necessary between persons and emitting machines in order to avoid exposure that exceeds FCC guidelines.
- Students and staff need to be aware that most laptop instructions specify the separation distance must be at least 20 cm (approximately 8 inches) and in fact, most cell phone instructions specify a

distance as well which is different for each phone depending on the make and model. Most districts have (or are moving towards) a Bring Your Own Device Policy, so a variety of models are in use in classrooms.

**Please note that the Queensland Department of Education, Training and Employment** issued [Your Guide to Safe Technology](#), a guide that informs students that *all wireless devices emit low levels of electromagnetic radiation and students should follow the manufacturer's usage guideline.*

- Students and staff need to be informed that these fine print warnings only attempt to address (and do not adequately do so) the thermal impacts of RF and do not protect from non-thermal effects of RF radiation. Research indicates non-thermal biological effects at much lower levels.

### **Recommendations to the General Assembly**

The General Assembly should consider:

- Funding a public health education initiative on electromagnetic radiation and health.
- Right To Know Legislation requiring that the public is clearly informed that cell phones and “wireless” devices emit radiofrequency radiation and how the public can reduce exposure.
- Legislation that reduces RF exposures to the public with special consideration for child care centers, schools, community centers, municipal buildings and hospitals and other healthcare settings.

Sincerely,

Devra Davis, PhD MPH  
President and Founder Environmental Health Trust  
Visiting Professor Hebrew University Hadassah Medical Center

Anthony B Miller, MD, FRCP  
Professor Emeritus  
Dalla Lana School of Public Health  
University of Toronto

Annie Sasco, MD DrPH  
Director of Epidemiology for Cancer Prevention  
University of Bordeaux, France  
Former Unit Chief of Epidemiology for Cancer Prevention at the International Agency for Research on Cancer

Beatrice Alexandra Golomb, MD PhD  
Professor of Medicine  
UC San Diego School of Medicine

Alvaro Augusto de Salles, Ph.D.,

*For Express Mail*  
7100 N Rachel Way  
Unit 6 Eagles Rest  
Teton Village WY 83025



*For U.S. Mail*  
P.O. Box 58  
Teton Village WY 83025  
www.ehtrust.org

Professor Federal University of Rio Grande do Sul-UFRGS, Porto Alegre, Brazil

Professor Claudio Enrique Fernandez Rodriguez,  
Professor Federal University of Rio Grande do Sul-UFRGS, Porto Alegre, Brazil

Theodora Scarato MSW

Mary Redmayne, PhD.  
Adjunct Research Fellow, Victoria University of Wellington, New Zealand.

Meg Sears PhD  
Chair, Prevent Cancer Now

Ignacio Casas Parera MD, PhD, FAAN  
Chairman Department of Neurology. Oncologic Institute "Angel H. Roffo".  
School of Medicine, University of Buenos Aires  
Buenos Aires, Argentina

Riina Bray MD, FCFP,  
Associate professor, Department of Family and Community Medicine, University of Toronto

Erica Mallery Blythe BMBS  
Founder of PHIRE (Physicians' Health Initiative for Radiation and Environment)  
Trustee Radiation Research Trust (RRT)  
Medical Advisor ES-UK  
Board Member CPTF

Dr. Elizabeth Evans MA(Cantab), MBBS(Lond), DRCOG - Retired Doctor

Dr. Jean Monro MBBS, MRCS, LRCP, FAAEM, DIBEM, MACOEM  
Medical Director Breakspear Medical Group

Cyprel Ijeh MD, MPH, MPA HS, FCMI, FRSPH

Dr. Andrew Tresidder, MBBS (Lond) MRCP(1989), GP and Physician Health Educator