

Questions and Answers about Wi-Fi in Schools

Why are doctors recommending wired - not wireless- internet networks in schools?

All wireless devices (including cell phones, cordless landline phone, any item with Wi-Fi or bluetooth capability, etc.) generate and emit an invisible electromagnetic radiation called radiofrequency (RFR). An ever growing amount of scientific [research documents show adverse effects from exposure to this radiation](#)—such as memory and sleep problems, headaches, cancer, and damage to reproduction, brain development, and DNA. These effects are found at very low levels of wireless radiation. The radiation penetrates deeper into children’s brains due to their thinner skulls. Children’s brains and immune systems are still developing, therefore they are more vulnerable to the effects.

Where can I find expert opinions about wireless effects on health?

Physician groups such as the [American Academy of Pediatrics](#), the [Vienna Medical Association](#), and [Athens Medical Association](#) are among the many [international medical organizations](#) that have issued recommendations to the public to reduce exposure to cell phone radiation. [Countries](#) such as France, Cyprus, and Israel have banned wireless in young children’s classrooms. In several [letters](#) sent to school districts, physicians strongly recommended wired connections for technology in classrooms to eliminate unnecessary wireless radiation exposures.

The American Academy of Pediatrics recommendations include:

- Use text messaging when possible, and use cell phones in speaker mode or with the use of hands-free kits.
- Make only short or essential calls on cell phones.
- When talking on the cell phone, try holding it an inch or more away from your head.*
- Avoid carrying your phone against the body like in a pocket, sock, or bra. Cell phone manufacturers can’t guarantee that the amount of radiation you’re absorbing will be at a safe level.
- If you plan to watch a movie on your device, download it first, then switch to airplane mode while you watch in order to avoid unnecessary radiation exposure.
- Avoid making calls in cars, elevators, trains, and buses. The cell phone works harder to get a signal through metal, so the power level increases.

**EHT recommends holding the phone as far away from the head and body as possible and minimizing overall wireless use by preferring corded connections.*

The Collaborative for High Performance School Low EMF Criteria includes:

- Install a wired local area network (LAN) for Internet access throughout the school.
- Provide wired network connections for desktop computers, laptops, notebooks, and tablets.
- All wireless transmitters shall be disabled on all Wi-Fi-enabled devices.
- Install easily accessible hard-wired phones for teacher and student use.
- Prohibit use of standard DECT cordless phones operating at 2.4 GHz and 5.8 GHz
- Prohibit the use of cell phones and other personal electronic devices in instructional areas / classrooms.

How are students and staff exposed to this radiation in schools?

When students use a wireless computer or laptop, talk with a cell phone to the ear or even carry muted phones in their pocket, the radiation penetrates into their head and body. Wireless devices are always emitting radiation, even when they are not actively in use. Students are also exposed to RFR from wireless internet access points installed on or inside classroom ceilings and walls. Radiation emissions from the cell phones in combination with the emissions from each of the other wireless devices/accessories/networks in a school building create a cumulative daily RFR exposure for students, teachers, and staff.

What do teachers say?

The United Educators of San Francisco passed a [resolution](#) on safer technology; numerous teachers’ unions are [calling](#) for reducing RFR exposures in schools to as few sources and as low emission levels as possible. The New Jersey Education Association published “[Minimize health risks from electronic devices](#)” recommending use of cords/cables/wires (rather than wireless) to connect devices and use of corded phones. The Ontario Secondary School Teachers’ Federation Limestone District has [called](#) for a moratorium on Wi-Fi. The [Canadian Teachers’ Federation](#) and [Ontario English Catholic Teachers Association](#) recommends avoiding and reducing RFR. New York’s United Federation of Teachers has posted Dr. Moskowitz’ “[Reducing Your Exposure](#)” and the [BabySafe brochure](#) for pregnant women.



Learn more at EHTrust.org

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What are best practices for schools to reduce this exposure?

Schools can ensure internet connectivity with safe corded connections, rather than wireless. EHT has developed a full list of [recommendations](#) for schools. Physicians [recommend](#) banning cell phones in schools for personal use and ensuring LAN networks, phones, printers, and technology systems are wired rather than wireless as best practices for schools. The [Maryland State Children's Environmental Health and Protection Advisory Council's](#) Report advises reducing RFR as much as possible with wired internet connections. The Collaborative for High Performance Schools, a US green building rating program, has developed [LOW EMF criteria](#) for classrooms so that RFR is reduced to as low as possible.

A [growing list](#) of schools are removing and/or reducing EMF exposure for students. An example of a private school policy to reduce RFR exposure is the [Upper Sturt Primary School WiFi and Cell Phone Policy](#). Castle Hill High School has developed [recommendations](#) to educate students on reducing cell phone radiation. FCC limits are not protective of health.

What actions are governments taking?

Numerous [governments](#) such as France, Cyprus and Israel are banning and/or restricting wireless in classrooms to reduce children's radiation exposure. The European Parliamentary Assembly issued [Resolution 1815](#) which recommends reducing EMF exposure to the public and recommends, "for children in general, and particularly in schools and classrooms, give preference to wired Internet connections, and strictly regulate the use of mobile phones by school children on school premises." Local governments have passed [resolutions](#) to promote wired rather than wireless internet and have [removed](#) and/or [halted](#) the introduction of wireless systems into school buildings.

What materials can I share with my school administrators?

The Santa Clara Medical Association Bulletin articles "[Wifi In Schools: Are We playing It Safe With Our Kids?](#)" and "[Shallow Minds: How the Internet and Wi Fi in Schools Can Affect Learning](#)" review the health impacts and doctors' recommendations. Both the New York State United Teachers (union) [webinar](#) and United Educators of San Francisco [webinar](#) are online videos about classroom wireless and health. Printable resources include the [New Jersey Education Association Recommendations](#), [Dr. Moskowitz of University of California Recommendations](#), [EHT's How To Reduce EMF in School Building Recommendations](#), and [CHPS Low EMF Criteria](#). Videos from an [expert forum](#) in Massachusetts on the impacts of Wireless in Schools featuring Dr. Ronald Melnick, Dr. Martha Herbert and Dr. David Carpenter are watchable online.

Resources

[Reducing Electromagnetic Field Exposure in the Classroom: EHT Guide for Schools](#)

[Doctor Letters on Wi-Fi in School](#)

[Physicians for Safe Technology](#)

[Joel Moskowitz PhD, Director of the Center for Family and Community Health School of Public Health at the University of California](#)

[The BabySafe Project \(EPA recognized campaign for pregnant women signed onto by over 270 Doctors, educators and public health experts\)](#)

[Grassroots Environmental Education Child Safe School](#)

[EHT Database of Worldwide Policies on Cell Phones, Wireless and Health](#)

[Generation Zapped](#): A documentary film investigating children and wireless that schools can screen to start a community conversation on the issue.

[Resources on Cell Towers at Schools](#)

[Draft Letter to School on Wifi and Health For Parents to use](#)

[Expert Forum on Wi-Fi in Schools](#)

Peer Reviewed Published Science

Pall. "[Wi-Fi is an important threat to human health: literature review.](#)" *Environmental Research*, 2018.

Miller et al. "[Cancer Epidemiology Update, following the 2011 IARC Evaluation of Radiofrequency EMF \(Monograph 102\).](#)" *Environmental Research*, 2018.

Carlberg and Hardell. "[Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill.](#)" *BioMed Research International*, 2017.

NIEHS, National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation, [Final Reports](#), 2018.

Avendaño et al. "[Use of laptop computers connected to internet through Wi-Fi decreases human sperm motility.](#)" *Fertility and Sterility*, 2012.

Houston et al. "[The effects of radiofrequency electromagnetic radiation on sperm function.](#)" *Reproduction*, 2016.

Shahin et al. "[2.45 GHz Microwave radiation impairs hippocampal learning and spatial memory.](#)" *Toxicological Sciences*, 2017.

Megha et al. "[Low intensity microwave radiation induced oxidative stress, inflammatory response and DNA damage in rat brain.](#)" *Neurotoxicology*, 2015.

Yüksel et al. "[Long-term exposure to EM radiation from mobile phones and Wi-Fi devices in pregnant rats and their offspring.](#)" *Endocrine*, 2015.

Kostoff and Lau. "[Combined biological and health effects of EMFs and other agents.](#)" *Technological Forecasting and Social Change*. 2013.

Yakymenko et al. "[Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation.](#)" *Electromagnetic Biology and Medicine*, 2016.

Redmayne. "[International policy and advisory response regarding children's exposure to radio frequency EMF.](#)" *Electromagnetic Biology and Medicine*, 2015.

Ferreira and de Salles. "[Specific Absorption Rate \(SAR\) in the head of Tablet user's.](#)" *LAW On Communications*, 2015.

Hedendahl et al. "[Measurements of RF Radiation with a body-borne exposimeter in Swedish schools with Wi-Fi.](#)" *Frontiers in Public Health*, 2017.

Siervo, B., [Numerical evaluation of human exposure to WiMax patch antenna in tablet or laptop.](#) *Bioelectromagnetics*. 2018