

Protecting Our Children (and Ourselves) Against EMF Exposure

BY MICHELLE BOYNTON

Three years ago, the Spring/Summer 2014 issue of *Renewal* included two articles about possible concerns associated with WiFi systems. The articles were motivated by increasing awareness in the public health and medical communities about the effects of certain types of electromagnetic radiation on the health of children (and adults). Not long before, the World Health Organization had classified electromagnetic fields, including those produced by pulsed radio frequency radiation, as a class two carcinogen. A class two classification means that, although there is not conclusive scientific evidence about the danger of a certain factor, there is enough evidence to cause serious concern.

One story described the decision by the City of Lakes Waldorf School in Minneapolis to minimize the exposure of students, teachers, and staff to ambient electromagnetic radiation created by WiFi systems and other electronic devices. A companion piece by Waldorf high school science teacher Michael D'Aleo offered practical advice on how to reduce exposure from WiFi systems, cell phones, and laptop computers.

The Waldorf high school science teachers who have studied the possible impact of *extremely low frequency (ELF)* and *electromagnetic fields (EMF)* recommend that schools take precautionary measures to reduce the

exposure of students, faculty, and staff. There are five main areas in which precautionary measures should be taken:

1. Wired Local Area Networks (LAN)—a network in which computers are connected to the Internet via wires
2. Wireless Local Area (WiFi) Networks (WLAN), transmitters, and devices

Since then, a small group of Waldorf teachers have researched precautionary practices based on professional guidelines for schools. Michelle Boynton was one of those teachers. Through her previous experience in the high-performance building industry, Boynton was familiar with the Collaborative for High Performance Schools (CHPS). The organization is a leader in the “national movement to improve student performance and the entire educational experience by building the best possible school.” (Their website is www.CHPS.net.) The following is an adapted version of the CHPS guidelines that Boynton revised for the Waldorf School of San Diego and that were subsequently approved by the board and the full faculty.

—R.E.K.

3. Computers and workstations
4. Telephones
5. Other building and campus electrical equipment

In each area, there are recommended “immediate actions,” and also measures that can be implemented in the future as the school budget permits. The building committee should work in collaboration with the full faculty to inform and educate students and parents about these measures and their importance.

1. Maximize wired Local Area Networks (LAN)

- Lower school and high school: Evaluate and document existing administrative and public areas with wired LAN (Local Area Network).
- High school: Evaluate and document existing classrooms and student support areas with wired LAN.
- Provide LAN throughout school as identified in evaluation. The high school will have needs in classrooms and in support areas, such as administrative offices.



Precautionary measures can be taken in outdoor areas.

2. Minimize Wireless Local Area Networks (WLAN), transmitters, and devices

- Inspect and document the location of WLAN access points.
- Minimize the number of access points and adjust the power output to the lowest level required to meet needs.
- Relocate access points a minimum of thirty-two feet from spaces regularly occupied by students and staff.
- Disable all wireless transmitters on all WiFi-enabled devices.
- Clearly label access points with instructions and warning signs.
- Provide a limited WiFi access zone where cell phones and WiFi-enabled devices may be used. The high school may have need for multiple zones.
- Post clear signage at the school entrances requesting that personal electronic devices be in power off or airplane mode.

3. Computers and workstations

- Desktop computers, laptops, notebooks, and tablets must be operated on a desk.
- Workstation equipment must be more than two feet from occupants.
- All wireless transmitters must be disabled on all WiFi-enabled devices.
- New purchases of desktop computers, laptops, notebooks, and tablets must be TCO-certified to meet mandate A.4.2 for EMF emissions. TCO certification means that certain ecological and sustainability standards have been met.
- New purchases of laptops or notebooks must have an Ethernet port and a physical switch to conveniently disable all wireless radios at once.



A WiFi router makes wireless connection to the Internet possible in a given area, but also fills that area with continuous pulsed electromagnetic radiation.

4. Telephones

- Evaluate and document the locations of easily accessible hard-wired phones for teacher and student use.
- Prohibit use of cell phones and other personal electronic devices in instructional areas.
- Cell phones and other personal electronic devices are required to be powered off or in airplane mode (not sleep mode).
- Install easily accessible



Signage in a high-use area at the Waldorf School of San Diego

hard-wired phones for teacher and student use as identified in evaluation.

5. Other building and campus electrical equipment

- Inspect, evaluate, and document common wiring errors per CHPS criteria EQ 15.1.
- Inspect and document the locations of cell phone towers, base stations, and above-ground transformers on or within fifty feet of school buildings or school property.
- Inspect and document locations of electrical supply rooms and building power supply.
- Inspect and document locations of utility meters and smart meters.
- Correct common wiring errors as identified in evaluation.
- Revise building occupancy so that low-occupancy areas are adjacent to electrical supply rooms and building power supplies.
- Request that the utility company replace smart meters with “non-smart” meters. ◊

Resources

<http://www.bioinitiative.org/>

<http://goo.gl/d7osII>



MICHELLE BOYNTON is an engineer turned educator. She received a degree in architectural engineering from Pennsylvania State University in 1991. During ten years of industry experience in the design and analysis of high performance buildings, she held the LEED AP certification and taught at the Design Institute of San Diego and the New School of Architecture and Design. Michelle received her Waldorf high school teacher certification through the Center for Anthroposophy in 2011 and has eight years of classroom experience teaching math and physics. She is currently a graduate student at the University of San Diego, pursuing her MEd in STEAM (Science, Technology, Engineering, Arts, Mathematics).