

# Campaign for Radiation Free Schools (CFRFS)

September 7, 2014

## A critique of the National Association of Independent School's One Page Statement, "*Non-Ionizing Radiation: Literature Review*" (June 2014) Regarding the Potential for Biological and Health Effects to Children from Wireless Radiation Transmitters (WiFi) in Schools

In June 2014, a statement was issued by the National Association of Independent Schools (NAIS) in Washington, D.C. which was clearly intended to reassure schools about the safety of WiFi. However, NAIS did not mention that several governments around the world are recommending limiting wireless radiation exposure to children, and banning WiFi in schools, or that teachers unions representing hundreds of thousands of teachers are questioning the safety of WiFi, and recommending schools be hard-wired.

A professional comprehensive review of the peer-reviewed literature would paint an entirely different picture of the risks to children from wireless technologies than this 1-page NAIS statement conveys, and importantly, would illuminate Radio-Frequency Radiation's effects on critical physiological functioning necessary for children's successful performance in school.

This document is a response to the NAIS statement. It offers reasons why schools charged with the care of children, adolescents and young adults ought to 1) not chronically expose students, faculty and administrators to wireless radiation; 2) practice the 'Precautionary Principle' when it comes to all types of electromagnetic field exposures (ELF and RF); and 3) utilize safer, faster and more secure *hard-wired* means of providing schools with networked computers and high speed digital internet connections. The response also calls on NAIS to retract its post, to investigate the subject more thoroughly, and to give NAIS member schools a more complete and realistic picture of the risks.

### Introduction

The National Association of Independent Schools (NAIS) document, called a 'Literature Review', purports to offer its 1,700 member schools 'resources' to handle inquiries regarding the advisability of WiFi in schools. This document does not, in fact, present a 'review' of the scientific literature, and its five references are based on information that is either misleading, untrue, subject of intense present controversy, or out of date.

On balance, the NAIS statement presents a woefully *incomplete and misleading* picture of what is presently known in the scientific literature regarding the potential for biological and health impacts to children from acute and chronic exposure to

## Critique of NAIS 1-Page Statement on WiFi 'Safety'

wireless technologies, and it omits to mention global trends to limit Radio-Frequency Radiation (RFR) exposures to children and young people, including limiting WiFi in schools.

The NAIS statement is unfortunately now misleading school administrators, faculty, parents and trustees about the safety of wireless technologies in schools, while also inadvertently supporting the telecommunications industry's aggressive push to rapidly deploy WiFi in schools, championed publically by FCC Chairman Tom Wheeler (formerly CEO for 12 years of the Cellular Telecommunications & Internet Association (CTIA), or 'The Wireless Association').

The brief NAIS statement is a disservice to our nation's children, teachers and school personnel. Their bodies and DNA will be impacted by the WiFi exposures throughout the school day, with potential for both acute and long-term health and life consequences from the chronic radiation exposures. **Campaign for Radiation Free Schools asks NAIS to remove its post on this subject until a more complete and impartial review is conducted, which we encourage NAIS to undertake.**

### **Evaluating Risk**

A professional, critical review of the scientific literature would include studying the Radio-Frequency Radiation (RFR) science dating back several decades (many thousand studies), reading the numerous literature reviews and unclassified military documents available, and/or discussing the subject with independent experts in bioelectromagnetics who do not have commercial conflicts of interests, i.e. no associations with the wireless industry. We would gladly organize an online or on-site scientific/medical conference on this topic for NAIS executives and Board Members.

**The effects from Radio-Frequency Radiation include documented impacts on cognitive function, attention, memory, perception, energy, emotions, and social skills, as well as increases in stress proteins, cardiac irregularities, diminished reaction time, decreased motor function, increased distraction, hyperactivity, inability to focus on complex and long-term tasks, heightened anxiety, increased sense of isolation and dependency, childhood dementia, called 'digital dementia', and much more.**

To issue a perfunctory 1-page, incomplete portrayal of this complex issue is not what we would have expected from the National Association of Independent Schools. One cannot help but wonder who might have supplied NAIS with this document, since neither of its co-authors are health or technology professionals. We also wonder, with all due respect, whether the support NAIS has received over the years from wireless and technology industry businesses mentioned in its Annual Reports, such as from LaptopSchools.com, Lenovo, Qualcomm and Google Chrome, has in any way biased NAIS or influenced the content of the NAIS statement issued on wireless risks.

## Critique of NAIS 1-Page Statement on WiFi 'Safety'

Finally, we were disappointed there was no mention at all of the students and faculty across the U.S. and the world presently experiencing 'electrosensitivity' symptoms after installation of WiFi in schools. Parents of WiFi-sensitive children have had to find new WiFi-free schools, or home school their children. Teachers and principals have left jobs because of symptoms they experienced in schools using high-power industrial WiFi routers. Teachers unions are protesting and wanting to limit WiFi. Health care systems are starting to classify 'electrosensitivity' symptoms as a 'Functional Impairment'—i.e. not a 'disability' of the person, but a functional impairment originating the person's environment. And government-run rest houses and 'white zones' free of any Radio-Frequency Radiation have opened in several countries where people over-exposed to wireless technologies can go to rebalance. Even the former head of the World Health Organization, Gro Harlem Brundtland, MD, previously Prime Minister of Norway, experienced severe electrosensitivity symptoms in office, and had to strictly minimize RFR exposures for a period.

This is certainly a health issue—but understand it is also *human issue*—and one that that is impacting large numbers of people in every socioeconomic category in very deep and destructive ways. It is important those in leadership positions in society, like executives at NAIS, not turn a blind eye to what is occurring.

**Certainly an association that makes it their business to be expert in all important matters to independent schools should make it their business to investigate the facts about this new important emerging public health issue—considering the human toll occurring; the science demonstrating risk; warnings from physicians, medical associations and scientific bodies; protests from numerous large teachers unions; governments warning of risks and taking protective actions, like in France, Israel, Australia, Chile, India, Belgium, Switzerland, Germany, Russia and more; and, most importantly, because of the potential for biologically disregulating effects from WiFi to greatly interfere with both learning and teaching.**

NAIS Board Chairman, John E. Creeden, stated NAIS is dedicated to 'modeling best practices in all that we do' and to 'developing deep and deliberate processes on the complicated issues facing all schools'. We contend it would be the right thing to do for the National Association for Independent Schools to retract its incomplete post, and to replace it with a document offering recommendations for safe technology implementation in schools. We would very much like NAIS to conduct a 'deep and deliberate' evaluation of the subject, considering all the options, and without commercial influence.

The next editions of two NAIS books, "The Greening of America's Schools" and "The Child Safety Handbook" might also include impartial discussion on safe technology options available for schools, and in the case of "Greening America's Schools", include discussion of the full life cycle environmental impact of school technologies, including such factors as waste generation, and the intensive energy use of wireless

technologies once installed, an important topic that is beyond the scope of this document.

## Key Points to Understand

### Exposure Guidelines

- The FCC safety guidelines were originally developed in the 1960s, based on thermal (heating) considerations alone, for adult military personnel operating radar equipment. The standard was developed for industrial and military users, and not by health experts, and it did not assume widespread chronic radiation exposures to the population at large. The *thermal* basis of these guidelines has not changed, and while the thermal concerns are valid, it is widely accepted that the thermal effects are *not the only risk factor*. There are *non-thermal effects* (reported in thousands of peer-reviewed, published studies) associated with a broad range of aspects of the radiation, including frequency, amplitude, pulse, intensity, polarity and information content. Thus, until the FCC establishes guidelines for the non-thermal effects, any reliance on current FCC guidelines based solely on thermal effects *would necessarily be incomplete*. The Government Accountability Office (GAO) has called on Congress to see that the FCC review, and update, its exposure guidelines, a process, now underway. Whether or not the FCC acknowledges the non-thermal effects at this time will be the determining factor in whether its guidelines have any public health value at all.

In a letter from the EPA to The EMR Network in 2002 (see attached), Norbert Hankin, of the EPA's Center for Risk Assessment, Radiation Protection Division, stated, **"The FCC's current exposure guidelines, as well as those of the Institute of Electrical and Electronics Engineers (IEEE) and the International Commission on Non-Ionizing Radiation Protection, are thermally based, and do not apply to chronic, non-thermal exposure situations. They are believed to protect against injury that may be caused by acute exposures that result in tissue heating or electric shock and burn...The FCC's exposure guideline is considered protective of effects arising from a thermal mechanism but not from all possible mechanisms. Therefore the generalization by many that the guidelines protect human beings from harm by any or all mechanisms is not justified...Federal health and safety agencies have not developed policies concerning possible risk from long-term, nonthermal exposures"**.

- FCC thermal guidelines are also based on assumptions of radiation absorption *on average*. Importantly, it is not the 'average' that matters biologically, but the maximum or peak levels of exposure that matter. Biological organisms respond to *maximum values, not to average values*, and they respond to the

*duration of exposures. An average exposure assumption as a basis for a safety guideline is thus not actually a safety guideline at all.*

This brings to light the gulf between engineers on the technical side of telecommunications, who think about heating concerns and averages, and scientists in fields of biology and cellular biophysics who understand engineering assumptions are not entirely relevant to biological organisms, as research over many decades demonstrates heat is not the only mechanism. The cellular stress response and DNA effects, for example, happen long before any heating occurs. Erratic, variable patterns of pulsing, which can be a function of the content being transmitted, are also more biologically active than static exposure conditions. Guidelines in many countries, such as Switzerland, China, Russia, Bulgaria, Hungary, Poland, Italy, Czech Republic and Slovakia are 1% of the US FCC guidelines and are based on adverse biological effects from Radio-Frequency Radiation *that do not include heating.*

- Consider that students, faculty and school administrators are also exposed to multiple simultaneous (and cumulative) exposures. The environment might have hundreds, or even thousands, of wireless devices in use at any given moment in a school, such as laptops, tablets, computers and printers. These devices emit radiation of their own (at extremely high levels, comparable to a powerful cell phone), and they communicate with wireless transmitters, which further increases emissions as the voice and data are transmitted. Responsible adults should ask themselves if it is wise for students to be on the RFR radiation equivalent of a cellphone call for many hours per day.
- It should be no surprise that serious health problems in children are occurring in schools with WiFi, including even life threatening cardiac irregularities and seizures. Research shows heart arrhythmia and tachycardia occur in sensitive individuals at 0.3% of FCC guidelines. One large school district we know of has reported cardiac arrest in children at 40x the expected rate in schools with WiFi. It is important those representing the interests of schools, and students, take into consideration the *full health impact of technology decisions*, which necessarily means familiarizing themselves with the independent science and not relying on industry affiliated parties to tell them what is safe. We recommend NAIS do its homework instead of trusting friendly parties for advice who may have other agendas. Students and faculty are suffering greatly and they need the truth to come out.
- While great concern has been expressed about the 'non-thermal' effects, for which there are as of yet no FCC guidelines, important recent research by Bell Labs and Sloan Kettering researchers, published in the Proceedings of the National Academy of Science (PNAS), conducted on animal tissue, indicates that even in situations where exposures seem to be within the FCC thermal guidelines, small hot spots up to several degrees higher temperature are

occurring as measured on MRI. The hotspots are thermal exposures higher than the present FCC thermal guidelines. If replicated in the human body or brain, the presence of thermal hotspots will have profound implications for the wireless telecommunications industry. *"NMR imaging of cell phone radiation absorption in brain tissue"*, Gultekin and Moeller, PNAS, Jan 2, 2013, Vol. 110, No. 1, pages 58-63

- You should know that no pre-market health testing was required for cell phones and wireless technologies, nor post-market surveillance of their effects, despite the federal government being well aware of the RFR biological effects from extensive military research dating back decades. The federal government, including the majority of Congress, has turned a blind eye to the Radio-Frequency Radiation risks in support of the telecom industry's commercial interests, which are now inextricably linked with the U.S. economy. In the case of schools, higher and higher-powered commercial routers are being installed (up to 5 Gigahertz), strong enough to penetrate through brick, wood and cement, and to cover large areas of the campus. An increasing number of people—students and faculty alike—cannot handle these higher power exposures, and it is essential this be appreciated and very promptly addressed.

**It is incumbent on all societal leaders, and especially those in education, to take a stand for the sake of those experiencing these disruptive, totally avoidable exposures, and to recommend implementation of well-conceived, safe technology strategies that can eliminate these issues completely.**

For further information on exposure guidelines, see *"Evidence for Inadequacy of the Standards"* in the 2012 BioInitiative Report, a review of the science showing non-thermal EMF effects by 29 experts in ten countries.

[http://www.bioinitiative.org/report/wp-content/uploads/pdfs/sec04\\_2012\\_Evidence\\_for\\_Inadequacy\\_of\\_the\\_Standards.pdf](http://www.bioinitiative.org/report/wp-content/uploads/pdfs/sec04_2012_Evidence_for_Inadequacy_of_the_Standards.pdf)

### **Health Highlights**

- ***Electrosensitivity.*** Out of a global population of 6.6 billion people, it is estimated that approximately 2.3 billion (35%) are moderately sensitive and 200 million (3%) are severely impaired.
- ***Biological Effects.*** According to Henry Lai, PhD, Research Professor at the University of Washington, electric and magnetic fields (ELF), radiofrequency (RF) and microwaves (MW) have similar biological effects. These include: cellular and molecular effects, nervous system impacts, blood-brain barrier permeability, cardiovascular changes, immune system effects, hormonal and metabolic effects, changes in calcium metabolism, increased stress response

and genetic effects. Some biological effects may happen faster, depending on the type of field, others slower, but they are happening all the same. These biological effects, in turn, result in a myriad of symptoms of discomfort and impaired functionality in sensitive persons, and also in biological changes without any initially noticeable symptoms in others.

The BioInitiative Report 2012([www.BioInitiative.org](http://www.BioInitiative.org)) offers an extensive review of thousands of studies showing non-thermal effects from electromagnetic fields (ELF and RF). The Table of Contents is listed here for your convenience. We highly recommend NAIS become familiar with the research in this report.

SECTION 1: SUMMARY FOR THE PUBLIC AND CONCLUSIONS

SECTION 2: STATEMENT OF THE PROBLEM

SECTION 3: THE EXISTING PUBLIC EXPOSURE STANDARDS

SECTION 4: EVIDENCE FOR INADEQUACY OF THE STANDARDS

SECTION 5: EVIDENCE FOR EFFECTS ON GENE AND PROTEIN EXPRESSION

SECTION 6: EVIDENCE FOR GENOTOXIC EFFECTS – RFR AND ELF DNA DAMAGE

SECTION 7: EVIDENCE FOR STRESS RESPONSE (STRESS PROTEINS)

SECTION 8: EVIDENCE FOR EFFECTS ON IMMUNE FUNCTION

SECTION 9: EVIDENCE FOR EFFECTS ON NEUROLOGY AND BEHAVIOR

SECTION 10: EFFECTS OF EMF FROM WIRELESS COMMUNICATION UPON THE BLOOD-BRAIN BARRIER

SECTION 11: EVIDENCE FOR BRAIN TUMORS AND ACOUSTIC NEUROMAS

SECTION 12: EVIDENCE FOR CHILDHOOD CANCERS (LEUKEMIA)

SECTION 13: EVIDENCE FOR EFFECTS ON MELATONIN: ALZHEIMER'S DISEASE AND BREAST CANCER

SECTION 14: EVIDENCE FOR BREAST CANCER PROMOTION

SECTION 15: EVIDENCE FOR DISRUPTION BY THE MODULATING SIGNAL

SECTION 16: PLAUSIBLE GENETIC AND METABOLIC MECHANISMS FOR BIOEFFECTS OF VERY WEAK ELF MAGNETIC FIELDS ON LIVING TISSUE

SECTION 17: EVIDENCE BASED ON EMF MEDICAL THERAPEUTICS

SECTION 18: FERTILITY AND REPRODUCTION EFFECTS OF EMF

SECTION 19: FETAL AND NEONATAL EFFECTS OF EMF

SECTION 20: FINDINGS IN AUTISM CONSISTENT WITH EMF AND RFR

SECTION 21: MOBILE PHONE BASE STATIONS: WELL-BEING AND HEALTH

SECTION 22: PRECAUTION IN ACTION - GLOBAL PUBLIC HEALTH EXAMPLES SINCE BIOINITIATIVE 2007

SECTION 23: THE PRECAUTIONARY PRINCIPLE

SECTION 24: KEY SCIENTIFIC EVIDENCE AND PUBLIC HEALTH POLICY RECOMMENDATIONS

SECTION 25: LIST OF PARTICIPANTS AND AFFILIATIONS

- **DNA Effects & Societal Concerns.** DNA is a fractal antenna and responds to a wide range of electromagnetic frequencies. DNA, with its 'coil of coils' structure, is sensitive to electromagnetic fields, including ELF, RF and ionizing radiation. It possesses the two structural characteristics of fractal antennas, electronic conduction and self-symmetry. These properties contribute to greater reactivity of DNA to electromagnetic fields, and the effects to DNA are occurring at well below thermal exposures. (See International Journal of Radiation Biology, by Martin Blank and Reeba Goodman, Columbia University, April 2011 - <http://informahealthcare.com/doi/abs/10.3109/09553002.2011.538130>). There are damaging genotoxic effects, effects on gene expression, chromosomal instability, gene mutations, DNA fragmentation and DNA structural breaks. As a result, risks with potentially serious consequences for future generations are now being taken in continually exposing our bodies to wireless technologies (See video <http://vimeo.com/17266941>). Children are especially vulnerable to all toxic exposures, and will have a longer lifetime of RFR exposure. Thus, every possible effort should be made to minimize RFR exposures to their bodies, for the sake of their functioning and health today, their fertility, and for the sake of the genetic material to be passed down to future generations.
- **WHO/IARC.** In May 2011, the WHO's International Agency for Research on Cancer classified Radio-Frequency Radiation from all sources, including WiFi, as a Group 2B 'Possible Human Carcinogen' by an overwhelming majority. This provided an official scientific basis on which governments, schools and parents could legitimately call for precautionary behavior regarding radiation-emitting devices and infrastructure. The IARC public statement specifically expressed concern about the widespread RFR exposure and the long-term exposures to young adults and children. Since the time of the IARC decision in 2011, several new studies and commentaries suggest there is now sufficient evidence to update the IARC classification to a Group 2A 'Probable Human Carcinogen'.
- **Warnings About Autism Link.** Harvard Professor Martha Herbert, PhD, MD, a neurologist and neuroscientist, and a leading autism researcher, has carefully examined the similarities between the physical impacts of EMF and what is known to be happening physiologically in autism, calling the similarities 'remarkable'. In a study, "*Plausibility of a Pathophysiological Link?*", she and co-author Cindy Sage concluded:

"With dramatic increases in reported ASC that are coincident in time with the deployment of wireless technologies, we need aggressive investigation of a potential ASC-EMF/RFR link"... "The evidence is sufficient to warrant new public exposure standards benchmarked to low intensity (non-thermal) exposure levels now known to be biologically disruptive."... "Strong interim precautionary practices are advocated."



## Critique of NAIS 1-Page Statement on WiFi 'Safety'

Earlier, Dr. Herbert strongly cautioned the Los Angeles Unified School District about WiFi, saying:

"Current technologies were designed and promulgated without taking account of biological impacts other than thermal impacts. We now know that there are a large array of impacts that have nothing to do with the heating of tissue. The claim from wifi proponents that the only concern is thermal impacts is now definitively outdated scientifically."

"EMF/RFR from wifi and cell towers can exert a disorganizing effect on the ability to learn and remember, and can also be destabilizing to immune and metabolic function. This will make it harder for some children to learn, particularly those who are already having problems in the first place."

"Powerful industrial entities have a vested interest in leading the public to believe that EMF/RFR, which we cannot see, taste or touch, is harmless, but this is not true. Please do the right and precautionary thing for our children. I urge you to step back from your intention to go wifi in the LAUSD, and instead opt for wired technologies, particularly for those subpopulations that are most sensitive."

- ***American Academy of Environmental Medicine.***

"Adverse health effects from wireless radio frequency fields, such as learning disabilities, altered immune responses and headaches, clearly exist and are well documented in the scientific literature. Safer technology, such as the use of hard-wiring, is strongly recommended in schools."

- ***ANSES-French Agency for Food, Environmental and Occupational Health, (2013)***

After a 2-year review of the science, ANSES warns, "...Against a background of rapid development of technologies and practices, ANSES recommends limiting the population's exposure to radiofrequencies—in particular from mobile phones, especially for children and intensive users—and controlling the overall exposure that results from mobile phone masts."

***Seletun Scientific Statement by International Scientists - 10 Key Points (2011)***

1. The Global Population Is At Risk.
2. Sensitive Populations Are Currently Vulnerable.
3. Government Actions Are Warranted Now Based on Evidence of Serious Disruption to Biological Systems.
4. The Burden of Proof for the Safety of Radiation-Emitting Technologies Should Fall on Producers and Providers Not Consumers.

## Critique of NAIS 1-Page Statement on WiFi 'Safety'

5. EMF Exposures Should Be Reduced in Advance of Complete Understanding of All Mechanisms of Action.
  6. The Current Accepted Measure of Radiation Risk—the Specific Absorption Rate ('SAR')—Is Inadequate, and Misguides on Safety and Risk.
  7. An International Disease Registry Is Needed To Track Time Trends of Illnesses to Correlate Illnesses with Exposures.
  8. Pre-Market Health Testing and Safety Demonstration Are Needed for All Radiation-Emitting Technologies.
  9. Parity Is Needed for Occupational Exposure Standards.
  10. Functional Impairment Designation for Persons with Electro-hypersensitivity.
- **Sana et al.** A Canadian study by Sana et al published in March 2013, "*Laptop multitasking hinders classroom learning for both users and nearby peers*", found participants who multitasked on a laptop during a lecture scored lower on a test of lecture comprehension compared to those who did not multitask, and participants who were in direct view of a multitasking peer scored lower on a test compared to those who were not. "The results demonstrate that multitasking on a laptop poses a significant distraction to both users and fellow students and can be detrimental to comprehension of lecture content." This study builds on a body of research showing multitasking in general impairs learning, adding the very important finding that *laptop* multitasking in classrooms also impacts the learning *of others*.  
<http://www.sciencedirect.com/science/article/pii/S0360131512002254>

While the extent of computer technology use in schools, relative to other tools for learning, should of course be considered carefully, we highlight this one study here to put the complex issue of 'technology in learning' on the table. There are certainly more reasons than RF exposures alone to explore the pros and cons, and the right balance, of technology use in schools. We recommend schools not rush to drink the wireless industry 'kool-aid', believing it necessary to extensively deploy expensive radiation-emitting technologies, that will later need expensive upgrades, encouraged by companies wanting schools and schoolchildren to become dependent on their products. Careful consideration, and the advisability of looking at the whole picture, with all possible learning aids and approaches, not over-weighted with technological approaches, cannot be stressed enough.

**WiFi-Related International Actions – A Sampling** (See Environmental Health Trust's more detailed summary with links, "*International Precautionary Actions*"):

**France:** Discourages Wifi in schools until proven safe. Bill passed by the French National Assembly calls for educational settings to "promote the use of wired data connections" and states that "the precautionary principle must push the state and local governments to protect children, especially the

younger ones, the influence of waves". Bans WiFi in nursery schools; Recommends limiting exposures to radiofrequency and controlling exposures to masts; Libraries, including the French National Library, and libraries in Paris and several universities, have removed WiFi.

**Australia:** Recommends parents encourage children to limit wireless exposures; encourages placing routers away from where people spend time, and reducing total exposures.

**Austria:** Official advice of the Public Health Department of Salzburg region is to not use WLAN and DECT in schools or kindergartens. Austrian Medical Society says children under 16 should not use cellular devices at all.

**Belgium:** Ghent municipality bans WiFi in spaces that cater to newborns and toddlers, and calls for preschools and daycare to reduce exposures.

**India:** Minister of Communications and Information Technology lowers RF exposure limits to 1/10<sup>th</sup> previous levels. Largest geographic region in India, Rajasthan, bans cell towers near schools and colleges due to the health hazard, prevailing in a Supreme Court battle initiated by the telcom industry. Several hundred RF emitting towers turned off.

**Israel:** All Israel schools now instructed to perform radiation tests; Minister of Health supports ban on WiFi in schools; hard-wire direct cable connection required if the teacher has a computer in the class; Preschool-2<sup>nd</sup> grade ban on WiFi; Supreme Court decision on possible Permanent Injunction on WiFi in schools scheduled for Feb. 11, 2015. Minister of Health Rabi Yaakov Litzman says, regarding WiFi in schools: "*I do fear that there will come a day that we will all cry because the irreversible damage that we, in our own hands cause the future generation.*" Tel-Aviv municipality to replace all school routers with on-demand routers that will not be on every day, all day; All teachers have the option of wired connection.

**Switzerland:** Thurgau Canton recommends schools forego the use of wireless networks when wired is otherwise possible.

**Germany:** German Federal Ministry for Radiation Protection says wired cable is preferred to WiFi. Bavaria State Ministry of Education recommends schools use wired networks whenever possible, and Parliament recommends that schools not use wireless networks; Frankfurt Local Education Authority says, "not wanting to conduct a large scale human experiment", Frankfurt schools "will have no wireless networks".

**Russia:** Russian National Committee on Non-Ionizing Radiation has warned for many years about the serious and irreparable impacts from radiofrequency radiation on children and recommends WiFi not be used in

## Critique of NAIS 1-Page Statement on WiFi 'Safety'

schools. Russian research has shown dramatic reduction in school performance in children using wireless devices. Professor Yury Grigoriev, Chairman of Russian National Committee on Non-Ionizing Radiation Protection, and a member of the WHO's International Advisory Committee on "EMF and Health", says: "Our recent 4-year monitoring of effects from cell phone radiation on children, demonstrates an increase in phonemic perception disorders, abatement of efficiency, reduced indicators for the arbitrary and semantic memory, and increased fatigue. Over the four-year monitoring of 196 children ages 7-12 who were users of mobile communication devices, a steady decline in these parameters from high values to bottom standards, compared to controls, was observed."

**Canada:** Elementary Teachers Federation of Ontario with 76,000 elementary school teachers says school Boards must stop hiding WiFi transmitters in the ceiling, and label them as part of a hazard control program. Want radiation from cell phones and WiFi to be recognized as a potential workplace hazard for teachers. Canadian Teacher Federation with 200,000 members calling for public education on ways to avoid WiFi exposures, and ways to meet school needs without it. Ontario English Catholic Teachers Association with 45,000 teachers calling for wired infrastructure in schools. British Columbia Confederation of Parent Advisory Councils (BCCPAC), representing over 500,000 parents, passed resolution calling on Board of Education to have one public school at each education level that is free of WiFi and to stop installing WiFi when hard-wired technology alternatives are an option.

**National Education Association (U.S.).** The National Education Association (NEA), the 'voice of education professionals' in the public education system, with 3 million members, includes the following language in its 2013-2014 Resolutions:

### **C-19. Environmentally Safe Schools**

"The National Education Association believes that all educational facilities must have healthy indoor air quality, be smoke-free, be safe from environmental and chemical hazards, **and be safe from hazardous electromagnetic fields.**"

We recommend NAIS, the 'voice of independent schools', adopt similar language and work to define, from an electromagnetic health perspective, what an electromagnetically clean school would look like (see suggestions below).

## **In Conclusion**

We do not expect NAIS executives to become experts on radiation science over night. But we do very much hope NAIS will take this emerging public health issue very seriously, and work with independent technical experts to recommend the safest technology strategies for schools.

## Critique of NAIS 1-Page Statement on WiFi 'Safety'

A 'deep dive' on this subject by NAIS would be a profoundly important service for its 1,700 member schools, with positive impact on large numbers of students, faculty and administration, both now and in the future. It would also model for schools, and their students, the critical thinking that is necessary in leadership, as well as the importance of courage on issues that matter.

### **20 Elements of an Electromagnetically Clean and Conscious School:**

- 1. Hard-wired cable or fiber optic communications networks, replacing over-the-air WiFi transmissions.**
- 2. Clearly labeled access points, in case of leakage.**
- 3. Workstations with Ethernet connections available throughout the school for laptop internet access.**
- 4. Students and school personnel taught to disable WiFi functionality on laptops and personal devices, so the default WiFi setting is not also operating when using the Ethernet connection.**
- 5. 'No Cell Phone' and 'No Cordless Phone' policies. Remote locations on campus designated where cell phone calls can be made in emergencies, and hard-wired landline telephone options available (phone booths). School community educated on the importance of minimizing the duration of use, and increasing the physical distance, when using wireless devices.**
- 6. Personal wireless devices to be turned OFF in school (not just in sleep mode).**
- 7. Personal hotspot devices not permitted.**
- 8. Wireless 'smart boards' removed.**
- 9. No wireless computer peripherals, such as mice, keyboards, etc.**
- 10. Printers using hard-wired Ethernet connection only, with WiFi function disabled.**
- 11. No iPads or other tablets for students unless they accommodate an Ethernet connection, and provide the ability to disable the wireless.**
- 12. Students, faculty and administrators taught to use an RF measuring device (meter) so they understand the existence of exposures and peak exposures, and can internalize understanding of this invisible pollution.**
- 13. School personnel trained to be alert for signs of chronic electrosensitivity symptoms from home WiFi exposures and wireless devices, such as headaches, dizziness, fatigue, irritability, heart irregularities, concentration problems, and develop programs to educate parents about the advisability of hard-wiring computers and internet connections, and limiting mobile phone use, in the home.**
- 14. Assess via AntennaSearch.com, and with an RF meter, any external Radio-Frequency Radiation sources, such as from antennas or towers within a mile of the school. Use the BRAG Antenna Ranking of Schools tool to determine if the school is in a high RF risk area. Also research broadcast antennas in the area. Shield buildings from external radiation using shielding paints, films, metal sheeting, fabrics and other**

- mitigation steps, as needed. Do not shield any building until the internal RF environment is clear, as harmful reflections could occur.
15. Radio-Frequency radiation in school environments should be monitored and documented on a regular basis, and especially after antennas are installed nearby, or when new technology, which could have wireless components, is introduced (even if the wireless will not be used).
  16. No wireless utility meters ('smart meters') on campus; only hard wired utility meters.
  17. No wireless paging systems on campus; only hard wired paging systems.
  18. No wireless security systems on campus; only hard-wired security systems.
  19. Conduct an annual EMF Audit, as part of an Annual Environmental Toxics Audit, assessing electric fields, magnetic fields, radiofrequency and microwave fields, and high frequency transients (dirty electricity), on school premises, and address the findings.
  20. Proactive exploration of legal options if a school is accepting financial remuneration from the wireless industry for placement of antennas on the campus.

We are grateful for your time and attention, and appreciate your willingness to learn about this emerging public health issue and its special importance for schools. We hope NAIS can play a pivotal role in the transformation of educational settings into electromagnetically clean environments, starting with giving NAIS members a more complete picture of the issue, as described herein. We stand ready to help.



**Camilla Rees, MBA (CRGR@aol.com)**

**Campaign for Radiation Free Schools, Founder**

**ElectromagneticHealth.org, Founder**

**International EMF Alliance, Co-founder**

**Enclosures:**

**-NAIS 1 page post on WiFi Safety, June 2014**

**-EPA Letter, Norbert Hankin, Center for Science and Risk Assessment, Radiation Protection Division, July 16, 2002, explaining FCC guidelines have not been developed for non-thermal effects of RFR and thus they cannot be considered protective.**