

How wireless technology may impact child development and central nervous system functioning.

[Electrical Sensitivity: Arthur Firstenberg and Susan Molloy](#)

The founder and director of the Cellular Phone Taskforce (Firstenberg) and cofounder of the Environmental Health Network (Molloy) provide a concise, referenced article on this emerging condition. (From *Latitudes*, Volume 5 #4)

[What Americans Need to Know about Radiation \(or EMR\) from Wireless Communications: Margaret Meade Glaser](#)

The author contends that Europeans and Russians know more than Americans about this important issue—and she tells you where you can find the facts you need.

[Consumer Reports on Cell Phone safety: February 2003 issue](#)

One of the first mainstream publications to question cell phone safety. Read the article!

[The Dark Side of Wireless Technology: Sheila Rogers, editor of *Latitudes*](#)

A heartbreaking account of how a cell phone tower placed next to a family's farm devastated the health of a Midwest family and their farm animals.

[A Possible Association Between Fetal/neonatal Exposure to Radiofrequency Electromagnetic Radiation and the Increased Incidence of Autism Spectrum Disorders](#)

Robert C. Kane, Ph.D, of The Associated Bioelectromagnetics Technologists, Blanchardville, Wisconsin, presents a theory that developmental exposures to electromagnetic radiation may help explain the dramatic recent increase in autism.

[A Physician Petition: the Freiburger Appeal](#)

Doctors unite to express concern for health effects of mobile phone technology.

Electrical Sensitivity

Arthur Firstenberg and Susan Molloy

The 750,000-watt Doppler weather radar at Fort Dix, New Jersey, overlooks the

Township of Brick. Why is that of interest to anyone but meteorologists? It's not, except that eight out of every 1000 children born in Brick since the radar station was built in 1994 are autistic.

The Brick Township Autism Investigation (1), conducted in 1998 by the Centers for Disease Control and Prevention, uncovered 60 cases of autism spectrum disorder (ASD) among children aged three through ten in this town of 77,000 residents. As in much of the rest of the world, autism is increasing here. But the prevalence of both ASD and classic autism in Brick Township were found to be dramatically higher than normal in the 3-to-5-year-old age group, i.e., those born since 1994.

Forward-thinking educators and parents have done a good job in recent years of tackling the difficult issues involved in protecting sensitive children from chemical contaminants, dyes, preservatives, and allergens in their food, medications, classrooms, and homes. However, an additional burden has been overlooked and even ridiculed as untenable as a factor in many children's profound neurological and behavioral problems. Some readers may react with disbelief to our suggestion that the Fort Dix Doppler might qualify for a place on the "radar screen" of those scientists who are puzzled by the local epidemic of autism. (2)

The authors of this article are adults who are made extremely sick, sometimes incapacitated, from exposure to "normal" amounts of electromagnetic energy. We've seen some children respond as we do, as their well-meaning parents and teachers equip them with newer, faster, more powerful "safety" and communication devices, oblivious to the potential consequences for their children's health and development. We're not oblivious to these consequences because we ourselves respond directly and immediately, with debilitating pain, confusion, and neurological symptoms, to cell phones, cordless phones, computers, televisions, and other normal elements of today's home, work and school environments. And we are in increasingly good company.

Gro Harlem Brundtland is director-general of the World Health Organization. A medical doctor with a master's degree in public health, as well as former prime minister of Norway, she has recently been speaking in public about her own sensitivity to computers, cordless phones and cell phones. Not only has she warned parents against allowing their children to use cell phones or microwave ovens, but she said that she herself has become so sensitive to the radiation that she does not allow anyone to enter her office with a cell phone turned on. "If you enter my office, you are invited by me. No one who is invited would like to give me headaches," she said at a news conference in Oslo on July 1, 2002, where she was attending an international conference on cancer.

Awakening to the potential of electricity to affect children's health and development can be initially disheartening, because electromagnetic pollution is so inescapable, and its sources so often are "conveniences" for which we've eagerly expended considerable resources. It can also be empowering, because it gives parents and practitioners an additional tool and offers a new range of potential factors that may be influencing

seemingly intractable health or behavior problems.

Both of us went to school and were graduated from college before personal computers, cell phones, the Internet, and everything that goes along with them even existed. As environmentally sensitive people, we feel lucky to have grown up before today's conditions became the norm.

What Can We Do?

Computers in the classroom are practically unquestioned now, and that is fine for the durable. However, our society should provide computer-free classrooms for those vulnerable children for whom this is a necessary and effective accommodation.

In schools where wireless computers—or regular computers with wireless keyboards/mice—are installed, even a computer-free classroom will not be an effective intervention for a child whose Attention Deficit Hyperactivity Disorder or Obsessive Compulsive Disorder is triggered or exacerbated by electromagnetic radiation. This is because the microwave frequencies used by these technologies, identical to the frequencies used in a microwave oven, pass through walls and do not respect the boundaries of classrooms.

What we suggest runs counter to the prevailing educational trend, which is to throw more and more computer-enabled devices at physically and developmentally disabled children in an effort to improve their functioning, without any consideration of the potential effects of the extra radiation on their developing nervous systems. When adult populations were sampled within the last year for the prevalence of electrical sensitivity, estimates by researchers varied from 1.5% (Stockholm, Sweden) to 3.3% (state of California) to 7% (Marin County, California) of the population. One patient group in Germany puts the number as high as 15% of the German population. Nobody knows exactly, because this is an isolating, disabling, and ridiculed problem that is still in the public health “closet,” along with most of its victims. Children are the most vulnerable segment of the population. They are also the most unaware of the potential effects of this invisible and largely unacknowledged pollutant coming from equipment that is so fervently sought by their peers and esteemed by their parents and teachers.

Medical facilities, also, are sites of electronics' proliferation. The growing field of medical telemetry uses wireless technology to monitor the vital signs of hospital patients. But also, in hospitals, nursing homes, day care and elder care facilities, mental health institutions and group homes, remote monitoring of patients is in increasing use, not only for medical purposes, but simply to cut back on personnel costs.

New automobiles have much larger electromagnetic fields than they had ten or twenty years ago. This is due to multiple computer-controlled operating systems, GPS satellite-tracking devices, digital dashboard displays, and, commonly, a cell phone constantly

charging in the car.

The situation is not hopeless.

At home, every parent can easily do the following experiment: tonight, before your family goes to bed, unplug all of these items you may have in your home: the TV, the computer, the base unit of the cordless phone, the entertainment center, and the baby monitor. Notice the quality of everyone's sleep, how you feel in the morning on awakening, and note whether you and your child seem calmer. Appliances should be completely unplugged, not just turned off at a surge protector (which itself may be a source of electromagnetic fields).

If your child has a motorized wheelchair, don't plug it in overnight next to his or her bed. Often these children are especially vulnerable as they may already have epilepsy, cerebral palsy, or other mobility-impairing conditions.

Electric floor or ceiling heaters, fluorescent lights, dimmer switches, and electronic security systems can all produce problematic electromagnetic fields. Finding all the sources and eliminating or avoiding them requires patience and may be time-consuming but is not necessarily difficult or expensive. Your basic measuring tools are a \$40 magnetic field meter, or "gaussmeter," and a cheap (poorer quality is better for this purpose) battery-operated AM radio. When the gaussmeter reads 0.2 milligauss or less, and the radio, when tuned between stations, remains silent (does not buzz or give loud static), you have a relatively calm environment—especially important in the sleeping area. These two measuring devices will not detect the very high frequency radiation produced by cordless phones, wireless computers, baby monitors, remote controls for appliances, radio-controlled toys, and other wireless equipment. We recommend eliminating wireless technology from the environment altogether.

Many homes will have ambient magnetic fields that cannot be reduced to 0.2 milligauss because of factors outside your control, most commonly nearby power lines and transformers. Neighbors' activities may also be a factor. But reducing exposures to the extent possible within the home may still have a significant effect, especially on neurological or behavioral problems in developing children. Exposures outside our own control, such as from the street, a radar station or cell tower, at school, or in hospitals and medical facilities, can be dealt with effectively only on a societal level. We have a long way to go before these problems are given the serious attention they deserve.

Ironically, some of our societal problems, such as school violence and kidnappings of children—even before 9/11 added to our worries—are being used as reasons to attach more cell phones to our kids for their safety and our peace of mind. But these very devices, and the millions of towers and antennas that make their use possible, expose all of us to a level of radiation that we know (from studies and painful firsthand experience) can contribute to the anxiety, depression, irritability, impulsivity, confusion, and general

unrest that feed the very concerns which led to the need for all those cell phones in the first place. This can begin to change as more of us turn them off and experience the difference.

FOOTNOTES:

1. Bertrand, J. et al., Prevalence of Autism in a United States Population: The Brick Township, New Jersey Investigation, *Pediatrics* 108:1155-1161 (2001).
2. The Doppler appears to be the latest addition to a number of radar facilities in the area. McGuire Air Force Base, Fort Dix Military Reservation, and Lakehurst Naval Air Warfare Center are all located west of Brick. Military jets from those bases, equipped with powerful radars of their own, also fly over Brick on their way out to sea.

SUGGESTED READING:

George Carlo, *Cell Phones: Invisible Hazards in the Wireless Age*, Carroll & Graf, New York, 2001.

Jane M. Healy, *Failure to Connect: How Computers Affect Our Children's Minds—and What We Can Do About It*, Simon & Schuster, New York, 1998.

B. Blake Levit, ed., *Cell Towers: Wireless Convenience? Or Environmental Hazard?*, New Century Publishing, Sheffield, MA, 2000.

Lucinda Grant, *The Electrical Sensitivity Handbook*, Weldon Publishing, Prescott, AZ, 1995.

Robert O. Becker and Gary Selden, *The Body Electric: Electro-magnetism and the Foundation of Life*, William Morrow, New York, 1985.

** Electromagnetic field (EMF) meters may be obtained from Alpha Lab, 1280 South 300 West, Salt Lake City, UT 84101, (800)-769-3754 Less EMF, Inc., 26 Valley View Lane, Ghent, NY 12075, (888) LESS-EMF.

About the authors:

Arthur Firstenberg is founder and director of the Cellular Phone Taskforce, a nonprofit organization that disseminates information about electromagnetic radiation and advocates for electrically sensitive people. He is editor of the Taskforce's publication, *No Place to Hide*, and the author of *Microwaving Our Planet: The Environmental Impact of the Wireless Revolution*.

After graduating Phi Beta Kappa from Cornell University in 1971 with a B.A. in

mathematics, he went to medical school from 1978 to 1982. Injury by x-ray overdose cut short his career. Firstenberg explains that after receiving about 50 diagnostic x-rays during extensive dental work, he became sensitive to high-powered equipment in the hospitals where he worked. "I could literally feel the radiation from the equipment; it made me weak and dizzy, but I kept working. After several months I collapsed. I was 31 and no one knew the cause of my illness. I was bedridden for about three months and at first I was not sure if I would survive."

Firstenberg's symptoms included a slow heartbeat, chest pain, extreme shortness of breath on exertion, and weight loss. By reading Eastern European literature on the subject, he eventually discovered that he had the symptoms of radio wave sickness. He later learned that any type of electromagnetic field may provoke similar illness in sensitive people, which commonly manifests with nausea, dizziness, headache, irritability, insomnia, and difficulty with memory and concentration. He also gradually became chemically hypersensitive.

His therapeutic approach is strict avoidance. At home, he has no computer, no television, no wireless equipment, no microwave, and uses only incandescent lighting. He moved cross-country to Mendocino, California which has minimal electrical pollution, and he is symptom-free as long as he avoids exposure.

As is often the case in advocacy organizations, Firstenberg's personal experience led him to study the condition that plagued him. He is now an international spokesperson and advisor on the subject of electrical sensitivity (ES). He can be contacted by phone at (707) 937-3990 or mail: P.O. Box 1337, Mendocino, CA 95460.

Susan Molloy has an MA in disability policy and provides referrals and troubleshooting for people with symptoms provoked by environmental exposures. She is cofounder of the Environmental Health Network (EHN) of California and edited EHN's newsletter for 11 years. She served as chair of the Independent Living Council in Arizona and works at New Horizons Independent Living Center in Prescott Valley. She works from home due to her inability to withstand electromagnetic exposure, and uses a custom-shielded computer provided by Arizona Rehabilitation Services Administration.

Molloy has a history of allergies since childhood and was hospitalized with chemical sensitivities at age 31. ES symptoms emerged shortly after this. "When I go under power lines or fluorescent lights it feels like a blow to the top of my head," she explains. Asked if she could run errands, Molloy explains, "I can go into stores and other buildings. It's getting back out that's the problem. I tend to lose coordination and would often be stumbling if I didn't use a wheelchair. I get disoriented and my speech is also affected." Professional-grade ear protectors help soften the impact of auditory hypersensitivity to

motor noises. She feels that living in the desert, where she keeps appliances to a minimum, has given her more stamina.

“I’d like to think that Arthur and I are just special cases, that people can stand back and distance themselves from our difficulties. I’d like to think that others won’t suffer similar problems. But we know better. The numbers are growing, and no one is listening.” She can be reached at (928) 536-4625 or susanm@cybertrails.com.

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What Americans Need to Know about Radiation (or EMR) from Wireless Communications

Margaret Meade Glaser

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EMR Network (Board of Directors)

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I was gratified that you included the topic of electromagnetic effects on biology, particularly from high frequencies used in wireless transmissions, in *Latitudes* (Vol. 5, #4). What Americans need to know, and what they are not being told, is that three out of four independent (non-industry sponsored) research studies worldwide are showing biological effects from low-level, nonionizing radiation similar to that used in wireless communications. These are called "nonthermal effects" because they occur at levels too low to cause tissue heating. The telecom industry, and the FCC's safe exposure guidelines, recognize only thermal (heating) effects. That means that exposures at intensity (power) levels below that threshold are officially being considered "safe" while the research is suggesting otherwise.

For clarity's sake, the frequency range of nonionizing radiation used in wireless communications is referred to as "radiofrequency/microwave radiation" or RF/MW. Microwave ovens get their name from the fact that they use this type of radiation to cook food (you could call this an example of a thermal effect). Radar frequencies are also in this range.

While the FCC maintains that its guidelines are protective, and indeed may be heading toward relaxing them significantly in the near future, that is not the position that was put forth by a federal interagency workgroup of nonionizing radiation experts. In a letter to

a standards setting committee in 1999 (1), they outlined fourteen points which they believed needed to be addressed before any FCC guidelines could be deemed credible and sufficiently protective of the public. Nothing was done with these recommendations.

In letters dated July and September 2002, scientists from the Radiation Protection Division of the US Environmental Protection Agency (2) stated that they are concerned about the burgeoning exposure of the public to nonionizing radiation, and that claims that the FCC guidelines are protective of all possible mechanisms of damage are unjustified. Do you think a wireless-happy public has any idea of this?

If this were all just theoretical and we had to wait years to see if there were any measurable effect, that would be one thing. However, I have talked to many down-to-earth, normal, professional and nonprofessional people who on their own have noticed headaches, dizziness, ear ringing, pain, and/or other symptoms when they use their cell or PCS phones. I just heard from a young man working in a telecom broadband department that he has fielded about 10 calls of this sort in the three months he has been there, and he is not even in the wireless department.

Since October, over a hundred doctors in Germany have signed a document stating that they are seeing increased health problems among patients related to cell phone use and chronic exposure to radiation from cell towers and antennas (3). In France, a first study was completed this past year correlating health symptoms with cell tower proximity (4). Clearly, something is going on.

If you look at the history of research on nonionizing radiation (the energy waves below the frequencies of visible light on the electromagnetic spectrum), you will see that nonthermal effects were first reported decades ago, but were deemed to be research mistakes. Over time, we have learned just how much the soviets knew about these effects as evidenced by their having beamed the U. S. embassy in Moscow with low levels of this radiation several decades ago. In fact, many in the embassy were found to have developed serious health conditions. You can read about this in Nicholas Steneck's 1986 book, "The Microwave Debate."

In the past twelve years there have been hundreds of studies showing these nonthermal effects--- such as DNA damage and nonrepair, opening of the blood-brain barrier (allowing toxins and pathogens to reach the brain), lowered immunity, decreased melatonin levels, effects on stress proteins (indicating cell damage), formation of micronuclei (aberrations in cell nuclei which are often markers for cancer), changes in calcium metabolism affecting communication between cells, changes in brainwave patterns as seen on EEG's, plus effects observed on many different systems of the body.

What is not clear is the degree to which these effects are cumulative given chronic exposure, and whether they are indeed linked to major health problems like cancer and neurological conditions. The bioeffects seen are, however, plausible precursors to such conditions, and some evidence suggests there may be an association. Even conservative

researchers who have witnessed and studied nonthermal bioeffects say that this radiation is a "probable" cause of health problems.

Right now, many schools are financially strapped, and the promise of a monthly check in exchange for leasing a bit of space on the property or building for antennas seems very attractive. (This is also true of hospitals, office buildings, apartment buildings, churches, etc.). There is a big push for educational achievement right now that is leading schools that can afford it to get wireless internet computer networks installed, some of which transmit microwaves all day long. When children go home, many use cell phones (and cordless phones, which while lower power, also emit radiation) and may live in the close vicinity of cell towers and building-mounted antennas. Some may have their bedrooms over wireless remote-read utility meters. Even the "second-hand smoke" of others' use of wireless devices and phones can be affecting them.

Since children are more vulnerable to this radiation, because their bodies are still developing and the radiation can penetrate them more deeply, where is it going to end for them? Will their bodies be able to handle all this, so foreign to the radiation environment in which we humans evolved? This is a serious question.

Some countries discourage the use of wireless devices by children. And some prohibit the placement of antennas near schools and day care centers. Meanwhile, in the U.S. it is actually illegal for zoning boards to consider possible health risks when deciding where to place mobile phone antennas. Thanks to the Telecom Act of 1996, such considerations are preempted by our federal government in order to give maximum freedom and opportunity to telecom companies. Some communities have been sued when trying to fight this. The Vermont delegation, with support from some other members of Congress, has recently introduced bills to reverse this ruling (5). It will take enormous support to offset the influence of telecom money and pass these bills.

I urge your Advisory Board members and other professionals to become familiar with this issue, and to help inform others. Some web sites providing information on the unheard side of this story are:

www.EMRNetwork.org

www.emfbioeffects.org

www.wave-guide.org

www.energyfields.org

www.tassie.net.au/emfacts/mobiles/children.html

www.electric-words.com

References:

(1) June 1999 letter to the Institute for Electronic and Electrical Engineers (IEEE) from the Radiofrequency Inter-Agency Work Group (RFIAWG). See link at www.emrnetwork.org under "Press Releases: 8/12/02"

(2) July 2002 letter to Janet Newton from Norbert Hankin, Scientist, Radiation Protection Division of the U.S. Environmental Protection Agency in response to a letter to Administrator Christie Whitman. See above URL for (1). Also September 2002 letter to Margaret M. Glaser from Frank Marcinowski, Chief of the Division in response to a letter to Administrator Whitman (not posted).

(3) October 2002, the Freiburger Appeal. See www.emrnetwork.org/news/IGUMED_english.pdf

(4) R. Santini study published in "Pathologie Biologie." See www.emrnetwork.org/research/santini_pathbio_eng.pdf

(5) Local Control of Cellular Towers Act (S3103) sponsored by Sen. Leahy, Jeffords, Murray and Dodd, and (HR5631) sponsored by Cong. Sanders, Tancredo, Shays and Davis. www.emrnetwork.org/action/30oct_02_fact_sheet.pdf

Books:

Cell Towers: Wireless Convenience? or Environmental Hazard? edited by B. Blake Levitt (2001)

Cellular Telephone Russian Roulette by Robert Kane, Ph.D. (2001)

Electromagnetic Fields: A Consumer's Guide to the Issues and How to Protect Ourselves, by B. Blake Levitt (2002)

About the Author: Margaret Meade Glaser has a Masters in psychology and school psychology and serves as chair of Public Relations on the Board of Directors for the Electromagnetic Radiation Network. She explains how her interest in high frequency radiations developed: *As the daughter of an electromagnetically savvy design engineer and a public health nursing administrator, it is not too surprising that I would be keyed into this issue, although it actually happened by accident!*

A cellular provider selected the chimney of our vintage condo building as a prime site for an antenna array two years ago and sought to negotiate a lucrative contract with our condo board to lease space. As a matter of course, I suggested we look a little further than the company's claims of complete safety before signing on the dotted line for twenty years. The more we looked, the more disturbing the picture. I realized there was a lot of information that was not reaching people in this country. After we defeated the antenna on our property, I joined the national EMR Network for information and support, and was eventually asked to join the Board of Directors. I have acted as Chair of Public Relations since.

In the course of my two years with the Network, I have been involved in Washington lobby efforts, assisted in a Congressional Briefing, participated in forums on wireless health issues, and met with researchers, government officials, attorneys, journalists, and grassroots organizers from around the world. In the Chicago area, I give talks and presentations on this topic.

As a school psychologist, I am particularly concerned with the impact of this proliferating radiation on young children, from exposure to cell phones, cordless phones, neighborhood (or even school property) antennas, wireless internet (WLANs) in classrooms, and an array of other wireless devices.

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Consumer Reports

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Home page: <http://www.consumerreports.org/>

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The Dark Side of Wireless Technology

Sheila Rogers, editor of *Latitudes*

This account, obtained by interviewing the mother of this family, has all the makings of a documentary. The name of the cell phone company and the source is withheld while the family looks for a lawyer willing to take the case (see note).

MEREDITH AND HER HUSBAND were dairy farmers on over 150 acres of rolling green land that had been passed down for generations. They had grown to love the simple lifestyle that came with hard work, fresh air, and farming in the Midwest. They and their four children enjoyed good health and happy days.

When the cell phone tower was erected twelve years ago they weren't too concerned, though they were certainly not pleased that it was just over the property line on the adjoining land and only 800 feet from their house. It was an eyesore, but they were assured it was perfectly safe. "It's like a 100-watt light bulb," the company often told people.

"We were naïve," says Meredith. "Over the next few months, we watched as our herd

that grazed near the tower became emaciated and agitated—a change from their normally fat and contented state. The whole herd developed rough coats. The vet was puzzled, but blood work produced no answers.”

MEANWHILE, WITHIN SIX MONTHS the parents noticed changes in their children. There were skin rashes—unusual, raised “hot spots.” They had recurrent kidney infections. The youngest two kids became dramatically hyperactive, and the older ones complained of foggy thinking and concentration problems. Then sleep disturbances crept in. Meredith, in her early thirties, began to develop joint problems.

“Everyone’s symptoms were worse,” she explained, “on foggy or rainy days. I since learned this was because the moisture increases the electrical conductivity. There were times when my preschool child would literally spin in circles.” One day she discovered that their tower had become the “hub” for the entire state. “We buried cows that winter,” she recalls.

Searching for solutions and options, they tracked down a researcher at the Environmental Protection Agency, who gave her the first useful advice they’d had. He told her that as a government official he should reassure her that they were safe. But with his “citizen cap” on, he had to say that they should move immediately.

WITH HOPES OF RETURNING ONE day, they sold the herd but had someone keep the heifers for them. Within two to three months of moving to an electrically clean area in upper Michigan, health problems began to subside. After a year, they all were feeling strong once more. The only problem was that their farm was unattended, they were out of money, and they desperately needed to farm again.

About this time, they spoke with new owners of the cell phone company. The staff expressed disdain for flagrant safety lapses of the previous tower owners. The family was assured that if they returned, everything would now be fine. Excited at the news, they went back to their farm.

It was not long before symptoms returned. The children lost weight and the girls began to lose hair. Meredith was pregnant but not gaining weight. That son was unfortunately born with anomalies—birth defects that fit no particular syndrome. Neighbors also had complaints; the suicide rate increased in town, and unusual seizures were reported.

Now, some calves were born with front legs shorter than the back and with deformed hooves; some had large tumors—one tumor was three feet in diameter and the calf could not be delivered alive, even with a C-section. And the tumors were not typical to the species.

THEY HAD BEEN BACK FOR THREE years when a pediatrician saw the son’s birth defects, heard the story, and told them to leave town. Why had they stayed so long? “We had to make a living. And somehow, when it’s gradually happening, you’re in

denial—you don't see it for what it is," Meredith said.

They managed to buy a farm in a safe area and start anew. "My husband insisted we take the cows with us, and within three days they were chewing their cuds—something they hadn't done for years." The young boy, though, remains electrically sensitive and hyperactive. Meredith says that if he is within two and a half miles of a tower he develops flushed skin. Computer terminals and fluorescent lights in stores increase symptoms. He has food sensitivities, and damp weather continues to affect him.

And the land—what happened to the farm? Meredith sighs. "It just sits there. Empty. Selling the farm has not been considered. Should we let this happen to someone else?"

End

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A Possible Association Between Fetal/neonatal Exposure to Radiofrequency Electromagnetic Radiation and the Increased Incidence of Autism Spectrum Disorders

Robert C. Kane, Ph.D.

Abstract—Recently disclosed epidemiological data indicate a dramatic increase in the incidence of autism spectrum disorders. Previously, the incidence of autism has been reported as 4-5 per 10,000 children. The most recent evidence indicates an increased incidence of about 1 per 500 children. However, the etiology of autism is yet to be determined. The recently disclosed data suggest a possible correlation between autism incidence and a previously unconsidered environmental toxin. It is generally accepted in the scientific community that radiofrequency radiation is a biologically active substance. It is also readily acknowledged that human exposures to radiofrequency radiation have become pervasive during the past twenty years, whereas such exposures were uncommon prior to that time. It is suggested that fetal or neo-natal exposures to radiofrequency radiation may be associated with an increased incidence of autism.

Introduction

Prior to the twentieth century the only sources of radiofrequency (RF) radiation were the hyper-low levels of RF energy originating from our sun and the even lower levels of extra-solar RF noise. It is in this environment of low-level RF radiation that life on earth developed and exists to this day.

During the 1940s, primarily as a result of research and development performed as a part of the war effort, industry and the military establishment were successful in bringing the state of RF energy generation to maturity. From that time onward we have witnessed a broad range of commercial RF energy product applications including, most notably, broadcast FM radio, radar, television, public-service mobile communication transceivers, residential microwave ovens, and the portable cellular telephone.

Initially, the contribution of each radiating device was imperceptible when weighed against the background of incoming solar radiation. However, over the span of decades the number of terrestrial RF radiation sources, now counted in the billions, has increased to the degree that, presently, the base radiation level is many thousands of times higher than from solar RF energy impinging on the earth.

Notwithstanding the proliferation of RF radiation sources during the early decades of the “radiofrequency age”, the 1940s through the 1970s, humans were seldom exposed to RF radiation at levels that might cause concern. Since the late 1970s a number of commercial products have become ubiquitous, which provide human exposures to levels of RF radiation that are significantly higher than either of the previous or present background levels. Research reports indicate that RF exposure levels, typically encountered from some commercial products, may induce alterations of biological processes or damage to the genome¹⁻¹³.

Concurrently the incidence of autism diagnoses demonstrates a pronounced, approximately linear, nearly three-fold increase occurring during the last twenty years. “The question as to when autism begins in any child remains to be answered. Some studies provide support for a prenatal or perinatal origin for autism.”¹⁴ For several decades prior to 1980 autism incidence remained essentially invariant; reportedly at about one diagnosed case per 2000 children. Byrd has reported a present autism incidence of about one per 700 children.

RF radiation sources have become commonplace in the personal human environment from approximately 1980 to the present. Operation of an RF radiation source such as a two-way radio or a cell phone exposes the operator to levels of RF radiation shown to be biologically active. Operation of an RF radiation source also exposes others, in the near proximity, to similarly biologically active levels of electromagnetic field intensities¹⁵.

Some of the known effects of exposure to RF radiation include cognitive impairment¹⁶, memory deficit¹⁷, EEG modifications¹⁸, DNA damage³⁻¹², chromosome aberrations⁶, micronucleus formation^{7,22}, fetal malformation^{1,2}, increased permeability of the blood-brain barrier^{19,23}, altered cellular calcium efflux²⁰ and altered cell proliferation²¹.

RF radiation exposures from residential microwave ovens are, typically, on the order of 1 milli-watt per cm². RF radiation exposures from cell phones range from about 0.1 to 10.0 milli-watt per cm². Portable two-way radios provide similar exposure levels. The

scientific literature confirms that RF radiation exposures, at levels more than 1,000 times lower than described immediately preceding, or on the order of 1.0 micro-watt per cm², induce significant changes in biological processes or molecular repair mechanisms ¹².

During gestation the possibility of unobservable embryonic and fetal damage is increased as mothers-to-be utilize and are exposed to the emissions from RF radiation devices. Researchers have emphatically reported that an embryo or fetus should not be exposed to radiofrequency radiation such as that emitted by the portable cell phone or portable telephone. One particular reason to avoid RF radiation exposure during pregnancy is that an embryo or fetus may not be fully protected by amniotic fluid for extended periods of time due to the natural movement of the embryo or fetus within the womb. Secondly, the pelvic structure promotes deep RF radiation penetration and that radiation can be absorbed within the developing embryo or fetus.

Other researchers have postulated that there may exist a previously unidentified environmental toxin associated with the observed increased incidence of autism. For example, the works of Byrd (California - 1999) ¹⁴, Bertrand ²⁴, (New Jersey - 2001), Taylor ²⁵, (United Kingdom – 1999), and Chakrabarti & Fombonne ²⁶, (United Kingdom – 2001) clearly support the proposition that the identified increased incidence of autism has an origin at about 1980: an increased incidence that has its origin established at the very time the personal RF radiation devices came into popular use – about 1980. We propose that RF radiation, a new form of exposure of the human embryo, fetus, and infant, and an acknowledged environmental toxin under many exposure conditions, may be associated with the increased incidence of autism. This proposition is further based on the fact that these radiating products are periodically and typically utilized in the embryonic, fetal and neonatal environment. RF radiation is the only known toxin, exposure to which is wholly correlated with the repeatedly documented increased incidence of autism: now reported by at least some researchers as greater than 1 per 100 newborn.

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A Physician Petition: the Freiburger Appeal

Hundreds of physicians have been signing a petition that raises health concerns over mobile phone technology: base stations, mobile phones and digital cordless phones. The appeal states:

We have observed, in recent years, a dramatic rise in severe and chronic diseases among our patients, especially:

- Learning, concentration, and behavioural disorders (e.g. attention deficit disorder, ADD)
- Extreme fluctuations in blood pressure, ever harder to influence with medications
- Heart rhythm disorders
- Heart attacks and strokes among an increasingly younger population
- Brain-degenerative diseases (e.g. Alzheimer–s) and epilepsy
- Cancerous afflictions: leukaemia, brain tumours

Moreover, we have observed an ever-increasing occurrence of various disorders, often misdiagnosed in patients as psychosomatic:

- Headaches, migraines
- Chronic exhaustion
- Inner agitation
- Sleeplessness, daytime sleepiness
- Tinnitus
- Susceptibility to infection
- Nervous and connective tissue pains, for which the usual causes do not explain even the most conspicuous symptoms

The Freiburger Appeal states: "We can no longer believe this to be purely coincidence, far too often do we observe a marked concentration of particular illnesses in correspondingly HFMR-polluted areas or Too often does a long-term disease or affliction improve or □ □apartments. disappear in a relatively short time after reduction or elimination of HFMR Too often are our observations □ □pollution in the patient's environment. confirmed by on-site measurements of HFMR of unusual intensity. On the basis of our daily experiences, we hold the current mobile communications technology (introduced in 1992 and since then globally extensive) and cordless digital telephones (DECT standard) to be among the fundamental triggers for this fatal development. One can no longer evade these pulsed microwaves. They heighten the risk of already-present chemical/physical influences, stress the body–s immune system, and can bring the body–s still-functioning regulatory mechanisms to a halt. Pregnant women, children, adolescents, elderly and sick people are especially at risk".

For more information/source: Mast Sanity, Affiliated to the Campaign for Planning Sanity <http://www.mastsanity.org>; A copy of the 'Freiburger Appeal' can be obtained from the web site.

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