

You and Your Health: What's the Buzz on Electricity?

Introduction

It is established science that exposure to ionizing radiation (found in x-rays) is unsafe. A growing group of scientists now believes that non-ionizing radiation (found in electricity coming from the power-line to the outlets in our walls) may be also unsafe. In response, the U.S. Government in 1999ⁱ and the World Health Organization in 2001ⁱⁱ declared “power-line electromagnetic fields” (EMFs) to be a “possible human carcinogen”—a pretty serious finding for these groups.

This question and answer sheet is designed to inform you of the dangers of EMFs, and to offer sensible solutions for a healthy community.

1. Question

What are EMFs and how do they affect me?

Answer

Electromagnetic fields (EMFs) are a product of the vibrating electrical currents (frequencies) of electricity—and are produced when the electricity is plugged into TVs, computer routers, clock radios, toasters, coffee grinders, cellphones, baby monitors, etc. All these EMF frequencies can affect our bodies in different ways.

On the positive side, researchers have found that exposing patients to pulsing EMFs can actually heal previously non-knitting bonesⁱⁱⁱ, and aid chronic pain sufferers.^{iv}

However, researchers have also found a strong connection between exposure to EMFs and leukemia, breast cancer, brain tumors, lymphoma, and possibly asthma, diabetes, lupus, chronic fatigue syndrome, eye problems, cognitive problems, and miscarriages.

2. Question

OK, so EMFs can be a problem, but those adverse health claims are pretty strong—where's the evidence?

Answer

Here's a small sample of scientific studies establishing a link between EMF exposure and health:

- **Leukemia**

In 1979 researchers Wertheimer and Leeper discovered that children who developed cancer (leukemia, brain tumors, lymphoma) were most likely to live closest to higher electrical current flows (i.e., closest to electrical transformers).^v

Dr. Sam Milham also confirmed the link between electricity and childhood leukemia by comparing the dates that different countries received electricity with a corresponding never-seen-before spike in childhood leukemia.^{vi}

- Miscarriages
Dr. De Kun Lee found that women who were exposed to high levels of EMFs (16 Mgs and above) had an almost double the number of miscarriages as women who were exposed to lesser levels of EMFs.^{vii}
- Brain tumors
A “meta study”—the result of 29 independent studies--found a 33% to 150% increased risk of developing a brain tumor from work exposure to EMFs.^{viii}

Since 1999, a Swedish team has consistently found that the longer one is exposed to cellphones and the younger the user—the greater the risk of developing brain tumors.^{ix}

- Multiple Health Risks
The most interesting evidence of multiple health risks due to EMF exposures comes from the cloak and dagger world of spies during the Cold War. From 1960-1965, Soviet spies directed electromagnetic emissions at the U.S. Embassy in Moscow, with the intent of causing confused thinking. The exposure caused more: the leukemia death of the U.S. Ambassador; eye problems including blurred vision, bleeding eyes, cataracts; blood changes that induced heart attacks; malignancies; chronic headaches; and extreme fatigue.^x

3. Question

This sounds bad—is there any way to avoid these unhealthy outcomes?

Answer

Yes, try to reduce your closeness to sources of EMFs. The intensity of EMFs emitted from electrical sources (for example, clock radios and cellphones) follows the inverse square law—meaning that the intensity of the field both increases and decreases by the mathematical “square” of the distance. So, if a cellphone user holds the phone 1/16 of an inch from his/her head, by moving the cellphone further away, say, one inch, the power of the EMFs emitted by the cellphone and absorbed by the user’s brain would decrease significantly: it would now be 1/256 as great.

4. Question

Wait a minute—you said cellphones? What’s wrong with cellphones?

Answer

Cellphones—really all “wireless phones” (cellphones as well as cordless phones and walkie-talkies)—emit enormously large doses of EMFs. These doses are large compared to other sources partly because cellphones need so much power to transmit and receive, “messages”. Computers, for example, generally produce lower doses of EMFs because they do not require as much power.

But what makes the EMF dose from cellphones especially strong is that with the inverse square law these doses of EMFs more powerfully bombard the head as the

cellphone is held directly next to one's ear (when talking) or more powerfully bombard the body (when the cellphone is being carried in a pocket).

5. Question

So what again are the health implications of cellphone use?

Answer

The research shows an increase in all brain tumors from exposure to cell phones with the biggest risk being an increase in the incidence of acoustic neuromas—a brain tumor of the hearing nerve. The group with the highest health risk from exposure to cellphones appears to be young persons, with persons 20-29 showing an 8 fold increase in risk of developing a brain tumor compared to a 1.5 fold risk for all ages. The increased health risks for younger people is consistent to the increased health vulnerability of youth to well-established cancer-causing substances.

6. Question

How likely am I to get a brain tumor from using my cell phone?

Answer

The great majority of cell phone users won't develop a brain tumor in their lifetimes, but using a cell phone greatly increases one's chances of developing a brain tumor. Similarly, the great majority of cigarette smokers won't develop lung cancer—indeed, only 10% of lifelong smokers develop lung cancer—nonetheless, cigarette smokers are at greater risk of developing lung cancer than are non-smokers. And, think on it: if the 10% risk for cigarette smokers is the same approximate risk for cell phone users, 10% of US citizens exposed to cellphones (out of 198 million cellphone users in the US) will equal about 20 million—20 million folks who may develop a brain tumor because of their exposure to EMFs next to their head.

7. Question

But if EMFs are such a huge health problem—why don't we all know about it?

Answer

Like the tobacco industry which hid the dangers of smoking for *decades*, the electrical power and cellphone industries have been actively involved in hiding the truth about EMF health risks.

8. Question

Please tell me about this—how are cell phone industries able to hid the dangers of cell phones?

Answer

So concerned are the electrical and cell phone industries about any threat to their economic interests that they actually have a hired "team" with the job of following and intimidating independent researchers who present evidence of harm at scientific meetings around the globe. They operate through aggressive verbal comments and

whisper campaigns against these independent researchers. Other strategies being used by these industries include: the control of research funds; the funding of studies designed to find no health effects, sometimes by setting the standard of proof impossibly high or by including too few cases; efforts to get representatives appointed to policy boards; and providing a “no harm” spin to the media.^{xi}

9. Question

Is there anyone else who doesn't want us to know the truth about the potential harm of electricity?

Answer

Yes—the U.S. military. The U.S. wants the option to weaponize EMFs, as the Soviets once did, so it does not want the public alerted to the fact that EMFs may pose harm.

And some of the military's activities (e.g., transmission of high EMF fields from radar and electronic warfare equipment) may be creating adverse health effects among military personnel and their families'—information that the military would rather keep unacknowledged and unexamined.^{xii}

10. Question

O.K. So EMFs can be dangerous and even lethal—but are all sources equal in posing a health risk?

Answer

There is some indication that another substance, coupled with EMFs, and nicknamed “dirty power”— may pose an additional health risk.

Until the 1980s, electrical power was almost always used continuously. However, since then most of our electrical equipment uses power intermittently, in on-off cycles, over 20,000 times a second. This rapid cycling creates radio frequency (RF) transients--also known as dirty power, electrical pollution, electrical hash, etc.. Ironically, many of the sources of EMFs that create dirty power were developed to save electricity, such as light dimmer switches, halogen lighting systems, and screw-in florescent light bulbs. Unfortunately, there is some evidence that exposure to these RF transients (dirty power) EMFs may pose a unique health risk with preliminary studies suggesting a possible link with several illnesses recently on the increase: asthma, chronic fatigue syndrome, multiple sclerosis, and diabetes.^{xiii}

11. Question

Is there anything that can be done about this “dirty power”?

Answer

The U.S. government could require manufacturers to include dirty power filtering within each product. It would cost only pennies per product unit.

Our government has historically regulated unwanted “effects” in electricity. In the early days of light dimmer switches they were found to cause interference with AM radio reception. The U.S. government subsequently required the light dimmer switch manufacturers to revise their design to filter out electrical interference.

12. Question

Is there anything else I need to worry about with electricity?

Answer

Unfortunately—Yes. The possibility of being endlessly bathed by dirty power EMFs, without our explicit knowledge or consent is increasing daily.

Without the necessary health research, cities large and small have welcomed multiple cellphone towers. WI-FI radiation is in our schools, cafes, hospitals, airports and soon entire cities. We encounter radiation as we walk through “theft gates” at stores. Because this technology is so new, no one knows exactly its threat of harm, yet it is clear that radiation via RF EMFs is occurring. Some of these sources may emit low levels, but may still pose harm analogous to “second-hand smoke”. A cumulative effect from multiple sources of RF EMFs, as new technologies increase, may indeed be very bad news.^{xiv}

13. Question

But EMFs, dirty power, radiating cellphones—all are common worldwide; so how do other national governments deal with the health risks to their citizens?

Answer

The same research is available worldwide. Many nations are finding ways at least to educate their citizens based on the research.

In Nov. 2004 the Republic of Kazakhstan passed legislation that mandated the filtering of all dirty power above a specified level.^{xv}

In the Republic of Ireland, a moratorium has just been instituted to prohibit the installation of cellphone towers near schools--until a thorough investigation of harmful effects is conducted.^{xvi}

Other nations have invoked “Precautionary Principle” or “Prudent Avoidance” doctrines—a “better safe than sorry” approach to health and potential environmental hazards. These doctrines state that, rather than waiting for conclusive scientific evidence (“proof”), precautions, and use of safer alternatives must be applied. The governments of Italy, Germany, UK, France, Czech Republic, Israel, and others are now applying the Precautionary Principle to cellphones, with a number of nations advising that youth under 18 be restricted from cell phone use.^{xvii}

14. Question

OK—I'm concerned: but what are we supposed to do? Are we supposed to unplug everything, cut our electric lines, and throw away our laptop and cellphone?

Answer

No, not at all! There are many simple things that you can do on your own at almost no cost. You can also join with others for long-term solutions.

Short-term solutions that you can achieve on you own include the following:

- Stay as far away as possible (say, a few feet) from sources of EMFs/radiation (remember the inverse square law). These sources can include clock radios, hair dryers (sorry), coffee grinders, toasters, etc.
- Use non-radiation producing and non-dirty power sources of energy when possible: landline phones, instead of wireless phones (cellphones, cordless phones, walkie-talkies). Use the non-electric version of knives, toothbrushes, etc.
- Replace light dimmer switches with toggle switches and halogen lighting systems with regular light bulbs.
- Keep electric radiation sources far from young children. Keep “baby monitors” out of cribs. Don't hold your baby while talking on a wireless phone.
- Carry cellphone only in the “off” position or carry it “on” in your purse or backpack. Try to use as answering machine to avoid irradiating your body. Use only with a headset/speaker phone so that phone will be far from your head/ear.

15. Question

What are the long-term solutions?

Answer

Here are a few long-term legislative solutions:

- Omnibus Radio Frequency (RF) EMF Health Legislation
 - Increase the funding for independent (i.e., non-industry) research on all current and future EMF sources.
 - Require the application of the Precautionary Principle or Prudent Avoidance, unless and until, each new RF EMF source is found to be safe.
 - Require manufacturers of electrical components to incorporate dirty power filters in all products.
 - Require residential and commercial construction be built with internal filtering.

- Wireless Phone Legislation
 - Require manufacturers of wireless phones to design phones with built-in headsets and without speakers that can be placed next to the ear or head.
 - Prohibit the cellphone industry from marketing and/or selling cellphone products to persons under age 18. [Note: Enforcement of this sort of law may seem as difficult as enforcing legislation that makes it illegal for minors to smoke cigarettes or drink alcohol—but that has not invalidated society’s need for laws restricting the rights of minors to smoke and drink.]
- Cellphone Tower Legislation
 - Overturn the 1996 Telecommunications Act, which made it illegal to consider health or safety issues in the placement of towers—or to refuse them outright.
 - Make it illegal to place a tower anywhere near at-risk populations such as children, pregnant women, the sick and elderly.
- WI-FI Wireless Networks Legislation
 - Call for a national moratorium on the use and installation of additional WI-FI until its radiation is found to be safe from health risk.
 - Require the substitution of non-EMF radiating (e.g., cable or fiber-optic) alternatives for computer network connection.
- Broadband Internet on Electrical Power Wiring (BPL) Legislation
 - Restrict the implementation of any new RF EMF source, whether BPL or otherwise, without thorough investigation of the health effects of these sources.

16. Question

Anything else?

Answer

Yes!

- You can share this info sheet with your friends, classmates, and coworkers;
- You can organize meetings to discuss this information;
- You can organize groups that you belong to—neighborhood groups, interest groups, religious groups, unions—to demand the introduction of the legislation suggested in this info sheet;
- You can lobby like hell to take back and create anew an electrically safe world.

Any questions? Contact D. Bilovsky or Lloyd Morgan at bilovsky@aol.com

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- ⁱ In 1999, the US NIEHS issued a report to the U.S. Congress on "Health Effects from Exposure to Power-Line Electric and Magnetic Fields"
- ⁱⁱ Microwave News July/August 2001 (<http://www.microwavenews.com/j-a01iarc.html>)
- ⁱⁱⁱ Pickering and Scamell; Electromagnetic fields for bone healing. *Int. J Low Extreme Wounds*. 2002 Sep; 1(3): 152-60
- ^{iv} Lefaucheur et al.; Low-frequency repetitive TMS of premotor cortex can reduce painful axial spasms in generalized secondary dystonia: a pilot study of three patients. *Neurophysiol Clin*. 2004 Oct;34(3-4):141-5.
- ^v Wertheimer and Leeper; Electrical Wiring Configurations and Childhood Cancer. *American Journal of Epidemiology*, Vol. 109, No. 3 1979.
- ^{vi} Sam Milham; Historical evidence that residential electrification caused the emergence of the childhood leukemia peak. *Med Hypotheses*. 2001 Mar;56(3):290-5.
- ^{vii} Li, DK et al.; A population-based prospective cohort study of personal exposure to magnetic fields during pregnancy and the risk of miscarriage. *Epidemiology*. 2002 Jan;13(1):9-20.
- ^{viii} Kheifets et al.; Occupational Electric and Magnetic Field Exposure and Brain Cancer: A Meta-Analysis. *Journal of Occupational and Environmental Medicine*, Vol. 37, No. 12, December 1995, 1327-1340.
- ^{ix} As but one example see, Hardell et al.; Cellular and cordless telephone use and the association with brain tumors in different age groups. *Arch Environ Health*. 2004 Mar;59(3):132-7.
- ^x <http://www.geocities.com/adrian999999999/pandora.htm>.
- ^{xi} Microwave News, When Enough Is Never Enough, From The Field, 23 November 2005 (see <http://www.microwavenews.com/fromthefield.html>)
- ^{xii} Currently there are 3 childhood leukemia cluster located at military bases: the Naval Air Station at Fallon, NV, Ft. Huachuca at Sierra Vista, AZ and the Naval and Air Forces bases on the island of Guam.
- ^{xiii} See Asthma and diabetes (see Bioelectromagnetics 2005, Abstract Collection, High Frequency Transients on Electrical Wiring: Blood Glucose Changes and Asthma Effects on Human Subjects, page 285: Multiple sclerosis (see Vancouver Sun, 8 March 2005)
- ^{xiv} A Danish study found that even low levels of WI-FI exposure caused headaches, dizziness and nausea. Olle Johansson, Karolinska Institute, 29 Nov. 2005, Your Own Health and Fitness, KPFA radio.
- ^{xv} Jackson County Chronicle, Ken Luchterhand, 23 November 2004.
- ^{xvi} <http://www.timesonline.co.uk/article/0,,2091-1849413,00.html>.
- ^{xvii} Microwave News, May/June 2003, p. 10.