

Cell phones: Invisible hazards of the wireless age

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Few people would be surprised to hear that cell phones are unhealthy. But how many of us actually know the degree of damage they cause, the extent of the cover-up by the industry, or that there is a viable solution? Dr. George Carlo, a mobile phone industry whistleblower, recently presented a talk in Vancouver about how electropollution from wireless technology can cause brain damage, cancer and an array of mental illnesses.

I checked his facts against recent, peer-reviewed scientific papers and the results were startling. Dr. Carlo explained why the industry's user manuals don't warn of these health hazards: currently, there are pending class action lawsuits against them, which threaten to expose the entire industry, similar to the cases brought against "Big Tobacco", and the asbestos and silicone breast implant industries. But what really shone brightly in Dr. Carlo's message were his realistic solutions. One option is to have fibre-optic cables running underground to our curbs to shorten the distance and power necessary for the wireless signals. According to Dr. Carlo, this option

requires an ongoing search for the diamond politician or activist who will take the lead. It's important to get the facts straight. Dr. Carlo, a scientist hired by the cell phone industry in the '90s, now believes cell phones are the greatest health hazard of our time. In his view, there is no question that mobile phones cause terrible health consequences. It seemed prudent to independently check the recent, peer-reviewed scientific literature to see if his mid-1990s results are supported today. A quick search revealed five excellent studies from 2006 that provide strong evidence of serious problems from electromagnetic signals from cell phones.

In contrast, several review studies that pooled results from 10 to 20 other studies suggested the evidence isn't conclusive either way. However, these reviews may have been diluted by the inclusion of some studies with ties to telecommunication industry funders. One author cited in these studies is affiliated with an Australian institute that has an FAQ web page full of suspicious PR (see www.acrbr.org.au/FAQ.htm). The website states this group of scientists has agreed, by committee, on the science they want to do: essentially, that which shows cell phones are harmless, and they will focus their research accordingly. Very revealing PR. Dr. Carlo also found that among more than 300 studies completed over the past six years, those funded by the industry are more than six times more likely to find "nothing wrong" than studies that are funded independently.

Dr. Carlo explained in detail his theory of how cell phones cause brain damage. It begins with the wave. The signals use carrier waves of around 1,900 megahertz (MHz), which are so high in frequency that they pass right through us, and our houses, unnoticed. But harmful information-carrying waves are packed into the carrier waves. These information waves, which carry signals that can be decoded by our computers and mobile phones, are low-frequency waves in the range of one hertz (Hz). That's slow. So slow that our cells can feel them as an aggravating, physical jolt at their surfaces. Within 30 seconds or so of bombardment, our cells temporarily shut down their surface transport and intercellular communication functions, to resist further damage from threatening invaders.

Normally, small threats to cells cause them to send out chemical signals to neighbouring cells that tell them to protect themselves from invaders, and they signal for help from our immune system's T-cells. But bombardment from mobile phone waves causes whole areas of cells and tissues to shut down their surfaces, stopping the active transport of good and bad stuff in and out of the cell, without time to signal a warning to other cells. Further, the shut down of gap junction communication pathways compromises tissue and organ functions, including the immune system. Free radicals build up inside the cells so they eventually die and spill toxins and fragmented DNA into the space between cells. There, micronuclei form as a result of membranes becoming organized around broken bits of DNA. These micronuclei wreak havoc, disrupting cell function and allowing cancers to form. That is how, as Dr. Carlo explains, both benign and malignant tumours are caused by wireless signals. He suggests a similar process occurs at the blood-brain barrier that protects our delicate neurons and their tiny sophisticated chemical signals from contaminants in our blood. Once cells in the barrier are shut down by mobile phone waves, all kinds of big, toxic molecules enter our neural spaces where they can cause many problems, among them "autism spectrum disorders," which include some types of anxiety attacks,

hyperactivity, ADD, problems with focussing, mild and severe autism, hyper-irritability and others.

Based on levels of adult cell phone use in the '90s, Dr. Carlo predicts 40,000 to 50,000 new cases of brain and eye cancer caused by mobile phones each year worldwide. By 2010, he estimates the number to be near a half million cases. Given that Dr. Carlo's prediction derives from conditions in the '90s – average use of 500 to 1,000 minutes per month, with little or no wireless background signal – the numbers are bound to be higher. Increasingly, we are blasted by wireless signals all day long, both at home and at work. In certain closed spaces, such as cars or buses, the signals are intensely amplified as they bounce around, trapped. Data, so far, suggest there is no safe level, only a probable safe duration of exposure. Our cells may not be damaged until after about 30 seconds of bombardment from wireless phone signals.

Dr. Carlo also suggests our cells can be imprinted so they remember the disruption and pass it down to future cells. This may be why some people seem to have heightened sensitivity, experienced as sudden unexplained anxiety when walking past a wireless hotspot. While peer-reviewed studies have not yet been done to directly address this claim, most of us have experienced the effects of an information-carrying signal that disrupts sensitive objects around us, like the car stereo. Although additional research is required, our instincts are probably right; these signals have an effect and it is unnerving.

So why don't our cell phones and wireless cards come with a "Use at your own risk" label and a warning that there is evidence they may be harmful? The crux of the problem is historical. Mobile phones were exempted from pre-market safety testing in the '80s because they were presented as merely "low-powered" devices, taking the onus off the industry to prove their safety. This was a problem for advocates and opponents alike.

Industry found it necessary to prove they were safe to defend against claims such as the cell phone related brain cancer death of Deborah Reynard in 1993. Reynard's cancer was unusual, growing from the outside to the inside of her head, at the precise location of her mobile phone antenna. Following that case, the industry began to fund its own researchers to study the health effects of cell phones, but it struck a deal with the regulating bodies that stipulated they would only research the damaging effects of cell phones as long as they could remain unregulated until all the research was done. That's when the industry hired Dr. Carlo.

Even before Dr. Carlo's group's research was published, the industry began to file for patents on devices to make them safe, but these depended on proof that cell phones posed a danger. It was a classic Catch-22, leading to a cascade of hypocritical acts by the industry as it sought safer technologies, while at the same time printing users' manuals stating that cell phones were not harmful.

The industry was obviously aware that Dr. Carlo was a threat; since his findings, he has been threatened, physically attacked, defamed and his house mysteriously burned down. By 1998, his group's research showed that the nearfield electromagnetic plume of seven or eight inches around

the antenna of the cell phone caused leakage in the blood brain barrier, as well as rare neural-epithelial cancers and double to triple the risk of benign and malignant brain tumours.

Then there's the story of Milt Bowling, Canada's most outspoken mobile phone critic and head of the Electromagnetic Radiation Task Force (ERTFC) (see <http://www.cleanenergycanada.com/index.html>). In the '90s, Bowling was catapulted into an all-consuming battle with the industry when it attempted to erect a cell tower on the roof of his son's school. It became outrageous when one company implanted a mobile phone transmitter inside a church cross and donated it to the church across from the school.

Bowling's story appeared on the *Fifth Estate* in 1997 and made waves around the world. His chief concern now is that our safety regulations are ridiculously outdated, only requiring limits for radiation high enough to heat body tissue by one degree celsius within six minutes. He says this is like saying "if it doesn't cook you, there's no problem." Clearly, science shows problems prior to the tissue heating.

Given the threat of public opposition roused by activists such as Dr. Carlo, and Bowling here in Vancouver, why don't our governments establish more restrictions? Vested interests are a huge problem. Governments know they can only charge a tiny fee for licensing alternatives, such as fibre-optics, whereas they can charge a fortune for wireless bandwidths, totalling several billion dollars in the US. So governments have taken the path-most-paying. As an example, to pay for initial, expensive, wireless infrastructure (towers), industry made agreements with regulators (e.g. the Federal Communications Commission, or FCC in the US) that the big companies could pay 10 percent down and leave the cell phone users to pay off the remainder. This may be the reason for the aggressive marketing of mobile phone plans to teens; there's a big debt to pay off. The industry's need to cover-up the hazards of wireless technology has been fuelled not only by fear of lost profits, but also by fear of bankruptcy. Insurance companies gradually withdrew all coverage for claims relating to health problems from cell phones following the first studies showing they were dangerous. Today, there are seven pending class action suits against the mobile phone industry; one successful lawsuit alone could bankrupt a company by setting a precedent for other pending lawsuits. It took just one such lawsuit each to bring down the silicone breast implant and asbestos industries.

A more frightening side of all of this is that the cell/wireless industries represent such an enormous portion of the stock market. If they caved in suddenly, the ripples could be catastrophic. We all need to be sensible. Expose the truth, plan for changes and move swiftly and intelligently towards a better, less wireless world.

This article was inspired by a ... [2006 November 3] talk by Dr. George Carlo, a scientist and cell phone industry whistleblower. Visit <http://www.safewireless.org> for more information about Dr. Carlo's work. His visit to Vancouver was sponsored by [BioPro Technologies, <http://www.bioprotechnology.com>] which is in a strategic alliance with Carlo's Safe Wireless Initiative] and the Health Action Network Society (<http://www.hans.org>).

Dr. Carlo offers solutions at three levels:

- 1) primary solutions that prevent damage;
- 2) secondary solutions that reduce the effects of the damage;
- 3) tertiary solutions that repair the damage.

Primary solutions include using a hands-free headset to keep the phone away from your body. However, this doesn't reduce your background exposure to wireless hotspots, and even worse, wire-antenna and Bluetooth headsets may act as antennas to attract ambient or background wireless signals to your head. Dr. Carlo suggests using "air-based" head sets, although they won't prevent second-hand electropollution.

The best solution is to reduce background radiation by moving to an older, but better, technology: fibre-optic cables that transport the signal to the curbsides of our schools, cafes, offices and homes, after which we can either plug-in to the signals or use short distance or air-based wireless. It's expensive in that it involves digging trenches to keep the cables straight and protected, but the technology is ready to go and the insulation around them is very effective; the radiation is almost nil.

Dr. Carlo suggests combining primary solutions with secondary and tertiary solutions. Secondary solutions include working with the subtle energies of our cells, which have their own natural electromagnetic fields. Tertiary solutions include enhancing people's overall health to foster the repair of cell membranes. Boosting our health by improving the immune system's ability to stimulate cellular repair may help with both of these solutions. However, in our cities with widespread, blanket wireless systems, as in Toronto where background radiation is already 500,000 times higher than it was five years ago, it's hard to imagine that merely boosting our immune systems could completely counter the harmful effects.

Lastly, Dr. Carlo talked about abstinence. He confessed that while abstinence works, it is not really practical. Try getting teens off their cell phones! One study showed that 91 percent of 12 year olds use cell phones, and in Buffalo teens were clocking in 2,600 to 7,000 minutes per month on their phones.

With cheap packages going for as little as \$150 for 5,000 minutes, it's unlikely teens will abstain any time soon. Among males, there's even the belief that carrying their phone in their front pocket, where it is known to reduce sperm count, is the greatest thing ever, good birth control! Abstinence doesn't work for cell phones any more than it works for teens and sex. In fact, Dr. Carlo himself uses a cell phone, albeit, with an air-based headset.

Marketing campaigns for mobile phones and wireless technology capitalize on our need to fill the empty spaces in our urban landscape. They are irresistible because they facilitate community. Despite the damage they cause, we like the feeling of the grassroots empowerment and interconnectedness they provide. If this connection is real, let's harness it now to spread the truth about these hazards and work together on solutions.

10. BioPro technology offers a comprehensive, multi level solution to all of this EM pollution in our system and environment and is in a strategic alliance with Carlo's Safe Wireless Initiative: For information go to: <http://www.mybiopro.com/BIOPROventionProgram.aspx?ID=LifeSkills>
11. *Aulterra Neutralizer* uses a small chip that neutralizes electromagnetic fields or EMFs, the harmful effects of cell phones and other electronic devices. For information go to: <http://www.aulterra.com>

Sources of Electrical Pollution

- *Computers and entertainment centers and other electrical appliances* convert the alternating current they are receiving to direct current which the equipment will use to power its activities using less electricity. In this process, high frequencies are produced that go out onto the electrical circuit and cause high-frequency electromagnetic waves to radiate out from the circuits. In other words, some of the high frequencies produced are radio wave and microwave frequencies that disseminate their energy through the air rather than follow the electrical circuits. Scientific Research has shown these "polluting" high frequency fields to have specific biological effects that are detrimental to the overall health of the individual.
- *Neighbours* who might be tech-savvy and tech-enthusiasts might not be sharing their knowledge or equipment with you but they are sharing with you the generated high frequencies - which find it easier to flow into your home (and airspace) and pollute it, rather than return through the transformer and on to the substation via the grid.
- *Downstream effect*: just as a river becomes more polluted downstream, so does the electrical power stream, which becomes more polluted the farther "downstream" it is from the substation. For example, each computer or entertainment center "upstream" contributes high frequencies to the overall electrical pollution of the grid downstream from it.
- One of the sources of electrical pollution is the *dimmer switch* (it takes a lot of electrical energy and "dims" it - the excess "light" is converted to radio frequencies).
- Another source is the *energy-efficient compact fluorescent bulb* promoted by electrical companies for conserving electricity. In the process of conversion to lower wattage, high frequencies are generated.
- *High-intensity light bulbs*, in the process of "compacting" their energy use, create high frequencies.

Common sources of radio waves radiation:

1. Outdoors

- Broadcast antennas (fixed);
- Broadcast antennas (mobile);
- Radar stations (fixed);

- Radar devices (mobile);
- Television cables;
- Satellites;
- Satellite receiving dishes;
- Satellite sending dishes;
- Cell phones,
- Pagers,
- Two-way radios.

2. Indoors

- Cordless telephone base units;
- Cordless telephones;
- Wireless computers and their base units;
- Wired computers;
- Televisions;
- Microwave ovens;
- Dimmer switches;
- Security systems;
- Remote controls;
- Fax machines,
- Answering machines,
- CD players and other digital equipment;
- (in automobiles) ignition systems;
- (in theaters) assistive listening systems and devices for the hearing impaired;
- (in theaters) wireless microphones.

Health Effects of Radio Waves and Microwaves

- Just as some people in the same work environment are more resilient to airborne pollution exposures than others, some people don't experience the symptoms associated with electrical pollution as much as others. However, long-term exposure that does not lead to immediate symptoms can still result in cumulative physiological effects that may ultimately cause serious disease. Every person is affected by electrical pollution, but some people are more sensitive, less resilient and therefore more susceptible to health problems associated with high frequency radio waves (this is known in the medical literature as "radio wave sickness").
- When initially high electrical pollution level was reduced to a safe level of under 30gsu (millivolt change per second of the higher, polluting frequencies), dramatic improvements in health have been observed in empirical research studies. It has been observed that recovery or improvement in health are cumulative and may be attained in as little as a few days to weeks, occasionally longer. The greater the cellular dysfunction and the severity or chronicity of the disorder, the longer the recuperation time may be.

- It has been theorized and illustrated with animal studies that electrical pollution affects so many people in so many different ways because the most prevalent detrimental body currents (radio frequencies) directly impair the immune system. It is believed that these radio frequencies use the bone marrow as their main conducting circuit within the body. The bone marrow is the part of the immune system where antibodies, white blood cells and other essential “germ-fighters” are generated. Removing these radio frequencies reverses this assault on the immune system, thereby allowing the body to restore itself.
- Magda Havas (<http://www.dirtyelectricity.org>) from Trent University in Ontario has shown health improvements for those suffering from diabetes, chronic fatigue, multiple sclerosis and attention deficit with the installation of the filters. Trent University News Release 2004 November 29 “Trent University researcher identifies potential to ‘clean up dirty electricity’.”
<http://www.emfpollution.com/files/pdf/EPR Trent News Release.pdf>

General Symptoms of Radio Wave Sickness

- *Neurological*: headaches, dizziness, nausea, difficulty concentrating, memory loss, irritability, depression, anxiety, insomnia, fatigue, weakness, tremors, muscle spasms, numbness, tingling, altered reflexes, muscle and joint pain, leg/foot pain, “Flue-like” symptoms, fever. More severe reactions can include seizures, paralysis, psychosis and stroke.
- *Cardiac*: palpitations, arrhythmias, pain or pressure in the chest, low or high blood pressure, slow or fast heart rate, shortness of breath.
- *Respiratory*: sinusitis, bronchitis, pneumonia, asthma.
- *Dermatological*: skin rash, itching, burning, facial flushing.
- *Ophthalmologic*: pain or burning in the eyes, pressure in/behind the eyes, deteriorating vision, floaters, cataracts.
- *Others*: digestive problems; abdominal pain; enlarged thyroid, testicular/ovarian pain; dryness of lips, tongue, mouth, eyes; great thirst; dehydration; nosebleeds; internal bleeding; altered sugar metabolism; immune abnormalities; redistribution of metals within the body; hair loss; pain in the teeth; deteriorating fillings; impaired sense of smell; ringing in the ears.

Source: *No Place To Hide* Volume 3, Number 1, April 2001, “Special Issue on Russian and Ukrainian Research” by Arthur Firstenberg. Cellular Phone Taskforce, P.O. Box 1337, Mendocino, CA 95460)

List available at <http://www.emfpollution.com/general-symptoms-of-radio-wave-sickness> and Symptoms of radio wave sickness

<http://www.emfpollution.com/files/pdf/EPR%20Symptoms%20of%20radio%20wave%20sickness.pdf>

Subjective complaints

Here are subjective complaints of persons working in RF fields (from *Electromagnetic Fields and the Life Environment* by Karel Marha, Jan Musil, and Hana Tuha. San Francisco Press, Inc. Page 30, with references): See also

<http://www.ewh.ieee.org/soc/embs/comar/Hypersensitivity.htm> See also the list at <http://www.microshield.co.uk/research.html>

Other Sources:

1. "COMAR Technical Information Statement: Electromagnetic Hypersensitivity," *IEEE Eng. Med. Biol.*, 2002 Sep/Oct, 173-175.
2. Allan H. Frey (March 1998) "Headaches from cellular telephones : Are they real and what are the implications?" *Environ. Health Perspect.* Vol. 106. No.3,
3. Sandyk R, Awerbuch GI. (1994) "The co-occurrence of multiple sclerosis and migraine headache: The serotonergic link." *Int J Neurosci* 76:249-257
4. Janigro et al, (1994) "Regulation of blood-brain barrier endothelial cells by nitric oxide." *Circ res* 75(3):528-538
5. Winkler et al, (1995) "Impairment of blood-brain barrier function by serotonin induces desynchronisation of spontaneous cerebral cortical activity: Experimental observations in the anaesthetized rat." *Neuroscience*, 68(4):1097-1104
6. Hansson Mild et al, (1998) *Comparison of analogue and digital mobile phone users and symptoms. A Swedish-Norwegian epidemiological study*
 - Workers complain of headaches and eyestrain, together with a flow of tears, of fatigue derived from over-all weakness, and dizziness after prolonged standing.
 - At night their sleep is disturbed and superficial and they are sleepy in daytime.
 - Such person are moody, frequently irritated, even unsociable.
 - They manifest hypochondriac reactions and a feeling of fear. Sometimes they perceive nervous tension or, on the contrary, mental depression combined with deterioration of intellectual functions (notably memory impairment).
 - Over a longer period, definite sluggishness and inability to make decisions result.
 - Those affected complain of a pulling sensation in the scalp and on the brow, loss of hair, pain in the muscles and in the heart region (together with a pounding of the heart), and breathing difficulties.
 - Not infrequently they complain of difficulties in their sex life.
 - It is moreover possible to observe slight trembling of the eyelids, the tongue, and the fingers, increased perspiration of the extremities, dermatographism, and brittleness of fingernails. A single irradiation may cause a drop in the resistance of the organism.
 - With regard to the dependence of the effect of RF field on sex, women are generally more sensitive to this factor than men.
 - Reference has been made to a decrease of lactation in nursing mothers.