

# Health Effects

## of electromagnetic Radiation

The following is an interview by freelance reporter Michael Fosburg with Dr. George Carlo, Chairman of the Science and Public Policy Institute, a non-profit public health group based in Washington, D.C. Dr. Carlo is recognized as one of the world's top experts on the health effects of electromagnetic radiation. He is the co-author, with Martin Schram, of *Cell Phones: Invisible Hazards in the Wireless Age* and was the chief scientist of the world's largest research effort into wireless safety.

**MF: Dr. Carlo, what is the Science and Public Policy Institute, and what role does it play regarding the dangers of cell phones?**

**GC:** We opened the institute in the early 1990s as a forum to address public health issues where there was a clash between science and politics. Over the years, we have studied controversial problems ranging from silicone breast implants, to hazardous waste sites and, more recently, mobile phone health risks. In 2002, we established the Safe Wireless Initiative project, initially to continue research into mobile phone dangers and, more specifically, to monitor health problems among cell phone users.

**MF: Is the Safe Wireless Initiative program still in operation?**

**GC:** Yes. In fact, we now have more than 6,000 members and we're growing every week. Our main focus is to provide information to consumers about the cell phone safety problem and helpful solutions to that problem. Our health concerns registry is the only post-market surveillance program in the world tracking health problems among cell phone users.

**MF: Shouldn't the government or the cell phone industry be doing that tracking?**

**GC:** Yes, they should. But while the mobile phone industry and government regulatory agencies continue to maintain that there is no evidence of increased disease among cell phone users, neither are monitoring these consumers for disease. No one is looking for problems or even counting, so how would they ever know if problems exist? Based on the \$28 million research pro-



gram I oversaw in the 1990s—research funded by the industry and overseen by a formal government interagency working group—we recommended that surveillance of phone users be put in place as far back as 1998. But absolutely no consumer protection steps have been taken. I find that inexcusable.

**MF: How can the government be so silent with so much publicity about cell phone dangers over the years?**

**GC:** The cell phone industry has effectively changed the focus from public safety to politics, and they have used political pressure to keep the lid on the issue. The watch dogs in government are not barking, and that has left the consumer unprotected. The Food and Drug Administration has inexplicably walked away from putting any regulatory control on cell phone companies. The Environmental Protection Agency had its radio frequency radiation budget cut to the point where they are no longer involved in the issue. Because of the flow of dollars associated with wireless communications, the Federal Communications Commission has openly become a financial partner with the industry in deploying the technology. In effect, mobile phone health risks are not regulated in the U.S. Consumers are unknowingly on their own in terms of protection. The Safe Wireless Initiative provides consumers with a safety avenue.

**MF: How does the Safe Wireless Initiative work to help consumers?**

**GC:** Besides providing up-to-date consumer information on the problem, we critically evaluate prevention products to make



sure consumers are not being misled by businesses trying to capitalize on disease fears. We have a dedicated, confidential Web site—[www.health-concerns.org](http://www.health-concerns.org)—where we ask people who believe that they have health problems related to their cell phones or other sources of electro-magnetic radiation to confidentially register their symptoms into the database so that we can continue the research. The information remains confidential so their identities are not compromised, but they will be helping other people tremendously. With the strength of numbers in the registry, it gives us a forum to influence federal and state legislators toward policy changes that will help solve the problem for everyone.

**MF: Here is a simple question that I have always wanted to ask. How do cell phones actually work?**

**GC:** The cell phone is really a radio that sends information signals on waves to a base station sometimes several miles away. To cover the distance, the signal is pushed by a burst of power which is the source of the radiation we are most concerned with. The farther the base station, the more power needed to carry the signal; the more power, the more radiation generated—and the greater the danger. Thus, the power bars on your phone give you an indication of how much radiation you are being exposed to during a call—the fewer number of bars, the greater amount of radiation.

**MF: With that being the case, can I protect myself by making calls shorter to reduce the radiation?**

**GC:** Not necessarily. The length of your call, or even the number of calls you make for that matter, are not as important in terms of the radiation as where you are when you make the call relative to the base station. For example, there is no way to know whether ten one-minute calls are better or worse than one ten-minute call in terms of health risk. That makes it difficult because there are no easy behavior changes that solve the problem.

**MF: What does the radiation from a cell phone do to us?**

**GC:** First, we are concerned about dangers from two different types of radiation associated with cell phones: the near-field radiation plume and a more subtle far-field contribution. The near-field plume penetrates your body about six inches from the center of the phone's antenna. If it's against your head, it penetrates your brain. If it's on your waist, it penetrates the important blood-forming flat bones of your hips. This plume is like a "bull in a china closet" and it overtakes all of our body's natural defenses against this type of exposure. We now know that this near-field plume leads to tissue dysfunction such as leakage in the protective blood brain barrier and genetic damage, including interference with DNA repair. These biological effects lead to conditions ranging from brain tumors to learning difficulties in children.

**MF: What about the other type of radiation that you mentioned, the far-field?**

**GC:** This field produces subtle effects for most people, but the effects are insidious and accumulate over time. Background

levels of electromagnetic radiation have increased dramatically over the past decade, and cell phones are now a major contributor to that background load. The mechanism leading to the danger is interference with the human biofield—the sum total of the energies generated as part of our metabolism. Our biofield is a major determinant of overall health and wellness. The increasing level of environmental electromagnetic radiation competes with our own energies and produces a general compromise of our physiologic processes. Over time, this deterioration can lead to a host of symptoms ranging from hyperactivity and attention deficit behavior to lowered immune response. Some people are extremely sensitive to this type of radiation, and electro-sensitivity prevalence is now on the rise around the world. This is a problem that will continue to worsen over time.

**MF: So, overall, where do we stand today with all of this?**

**GC:** After two decades of science, we know that serious health risks are associated with radiation emitted by mobile phones and other wireless devices. We are particularly concerned about brain cancer, other tumors of the brain, eye cancer, genetic damage, brain ailments, as well as behavioral and learning problems. Children have become the main focus of our Safe Wireless Initiative because they begin using mobile telephones very early in life, and they are showing unprecedented infatuation with the devices resulting in excessive usage. All this while their growing tissues and organs are more susceptible to the type of damage that we have seen in the research. Consider that published epidemiological studies of adult cell phone users indicate that usage in the neighborhood of 500 minutes per month over about ten years leads to a doubling in brain cancer risk. A study we conducted last year in Buffalo, New York, showed average teenage usage in the neighborhood of 2,600 minutes per month—more than five times greater than the adults in the studies showing increased cancer risk. What will happen to these young people after a lifetime of use? No one knows exactly, but the predictions based on today's data are dire.

**MF: If this is such a big problem, how come everyone isn't talking about it?**

**GC:** The big problem is that the telecommunications industry has not only failed to heed intervention recommendations that would make the products safer, but has purposefully, and effectively, sought to shape public perceptions about dangers by controlling both the media and the output of the worldwide scientific research agenda. In some cases, the mobile telephone industry has circulated false information to the news media about research findings. Furthermore, the industry has actively sought partners such as the Disney Corporation to facilitate sales to children, openly identifying the 8 to 12 year-old age group as a "target market," called the "tweeners". Thus, the "need" for the cell phone is established very early in life, and it becomes almost an addiction. This is scarily similar to addictive nicotine added to cigarettes. This type of open disregard for the safety of consumers, especially young people, is grotesque.

**MF: But shouldn't the government be protecting consumers from this danger?**



## Key Dates In the Evolution of the Cell Phone Health Effects Issue

- 1983—Cell phones were exempted from pre-market testing for health risks by U.S. government regulators based on the assumption that the low power pushing the radio waves could not cause harm
- 1988—the United States military implements protection technology for radio communications personnel based on classified research findings that included work done by private sector wireless industry companies
- 1993—David Reynard, on the “Larry King Live” show, presents medical evidence suggesting that his deceased wife’s brain tumor was the result of her cell phone use; his presentation prompted claims by the cell phone industry that “thousands of studies” proved cell phones were safe; when it became clear that there were not studies directly relevant to cell phones, congressional hearings ensued; to avoid regulation, the cell phone industry pledges what became \$28 million for research into dangers of cell phones
- 1995—Independent industry-funded research determines that digital cell phones interfere with implanted cardiac pacemakers, thus presenting a danger to wearers; industry distances itself from findings and cuts off funding for further research
- 1996—Independent industry funded research resumes, but with limited scope
- 1999—Independent research findings indicate genetic damage from cell phone exposures and increases in the risk of benign and malignant brain tumors
- 2001—publication of *Cell Phones: Invisible Hazards in the Wireless Age* triggers the filing of five class action lawsuits against cell phone companies
- 2002—product liability insurance coverage for cell phone companies excludes protection against health risk claims; industry effectively becomes self-insured
- 2004—European Union REFLEX study results released confirming genetic damage and other findings of previous industry funded research
- 2005—U.S. Supreme Court decides that cell phone cases should move forward in state courts

## Children And Cell Phone Radiation—Government Actions to Protect Children and Teenagers

- *The German Academy of Pediatrics* has warned parents to limit cell phone use among children;
- *The Russian Radiation Protection Bureau* has advised pregnant women and children under the age of 16 to avoid mobile phone use altogether;
- *Parliamentary health officials in Great Britain* have twice urged the nation’s wireless industry to refrain from promoting mobile phone use in children and publicly discourage children from using mobile phones for non-essential calls;
- *Scandinavian health authorities* have recommended that all consumers, especially children, should use whatever means possible to reduce their exposure to mobile phone radiation emissions;
- *Health officials in Israel and Austria* continue to recommend that children under the age of 16 not use cell phones at all.

**GC:** Yes, they should. But while some governments around the world have taken steps to protect citizens and consumers, the actions have been slow and minimal because of the resistance movement mounted by the industry. In the United States, nothing has been done for protection whatsoever. If you follow the money, the reasons become clear. In both the United States and Europe, billions of dollars are being collected by governments who sell the telecommunications spectrum to the private sector. Revenues collected from spectrum auctions in the late 1990s and continuing tax revenues from consumer usage have put governments in a compromised position: they have a vested economic interest in the continued financial success of the wireless industry. Strong regulatory control to protect consumers is arguably counter to government political and financial interests.

**MF:** Your words are not very comforting. What can you recommend to those wanting to protect themselves from these cell phone dangers?

**GC:** The most important step is for consumers to recognize that there is indeed a safety problem with cell phones, and that neither the wireless industry nor government regulatory bodies are motivated to take the lead in offering protection. Thus, individuals concerned about their safety need to take steps on their own. Through the Safe Wireless Initiative, we are trying to provide information that will empower consumers toward safety. But, the problem is complicated and, as yet, there is no silver bullet solution. That is why it is important for consumers to be aware of new and emerging findings that accrue protection. At the same time, they must be aware that many products on the market offering protection are bogus, and they must be in a position to become educated about what works and what does not.

**MF:** So, what works?

**GC:** The most effective primary preventive are the hands-free headsets that effectively move the near-field radiation plume away from the body, thus significantly reducing exposure. I personally use an air-tube headset—fully wired headsets can act as an antenna, attracting ambient far-field radiation toward the head. The air tube lowers that risk. Phones equipped with speakerphones accomplish the same primary protection, as long as the phone is kept more than six to eight inches away from the body when being used. There is a noise field technology, developed jointly by scientists in the U.S. military and the private sector, that may soon be available to consumers that effectively eliminates first stage biological effects triggered by both near-field and far-field radiation. There are also secondary preventives that compensate for biofield interference from general sources of electromagnetic radiation. These are available as after-market accessories that can be attached to the phones themselves. Finally, consumers should remember that any steps they take to improve their health will help them fight the effects of these exposures. ■

More information is available at: [www.sppionline.org](http://www.sppionline.org) and [www.safewireless.org](http://www.safewireless.org).