



Cell-Phone Safety

By Bryan Walsh

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It takes a little extra work to get in touch with Andrea Boland. The Maine state representative answers e-mails and lists her business and home phone numbers on the Web. But unlike many politicians surgically attached to their BlackBerrys, she keeps her cell switched off unless she's expecting a call. And if she has her way, everyone in Maine — and perhaps, eventually, the rest of the U.S. — will similarly think twice before jabbering away on their mobiles.

In March, Maine's legislature will begin debating a bill she submitted that would require manufacturers to put a warning label on every cell phone sold in the state declaring, "This device emits electromagnetic radiation, exposure to which may cause brain cancer." Her warning would continue, "Users, especially children and pregnant women, should keep this device away from the head and body." ([See pictures of the cell phone's history.](#))

For those of you now eyeing your cell phones suspiciously, it's worth noting that both the National Cancer Institute and the World Health Organization say there isn't evidence to support the assertion that cell phones are a public-health threat. But a number of scientists are worried that there has been a dangerous rush to declare cell phones safe, using studies they feel are inadequate and too often weighted toward the wireless industry's interests. An analysis published by University of Washington neurologist Henry Lai determined that far more independent studies than industry-funded studies have found at least some type of biological effect from cell-phone exposure.

Several countries — including Finland, Israel and France — have issued guidelines for cell-phone use. And San Francisco Mayor Gavin Newsom, who began researching the issue when his wife was expecting their first child, is hoping his city will adopt legislation that would have manufacturers print radiation information on cell-phone packaging and manuals and require retailers to display the data on the sales floor.

With 270 million Americans and 4 billion people around the world using cell phones — and more signing up every day — a strong link between mobiles and cancer could have major public-health implications. As cell phones make and take calls, they emit low-level

radio-frequency (RF) radiation. Stronger than FM radio signals, these RF waves are still a billionth the intensity of known carcinogenic radiation like X-rays.

The wireless industry contends that RF radiation lacks the strength to alter molecules in the human body; the Federal Communications Commission (FCC) maximum for cell-phone-signal exposure is intended to prevent RF radiation from heating tissue to the point that cells are damaged. Cell-phone RF radiation's "effect on the body, at least at this time, appears to be insufficient to produce genetic damage typically associated with developing cancer," Dr. Robert Hoover, director of the National Cancer Institute's Epidemiology and Biostatistics Program, testified at a 2008 congressional hearing.

But the body of research is far from conclusive. In 1995, Lai co-wrote a study showing that a single two-hour exposure of RF radiation — at levels considered safe by U.S. standards — produced the sort of genetic damage in rats' brain cells that can lead to cancer. Though subsequent researchers — often funded in part by the wireless industry — failed to replicate Lai's results, a 2004 European Union — funded study reported similar findings.

Dariusz Leszczynski, a research professor at Finland's Radiation and Nuclear Safety Authority in Helsinki, has done studies indicating that RF radiation may create a stress reaction in the cells that line blood vessels, leading to a dangerous breach in the blood-brain barrier. "Mobile-phone radiation may be able to indirectly hurt cells, perhaps by interfering with their ability to repair normal DNA damage," he says. "Given the scientific uncertainty, it's premature to say the use of cell phones is safe."

If RF radiation increases the chances of developing brain cancer, it should show up in long-term studies of cell-phone users. But many epidemiological studies have found no clear connection, including a 2007 Danish Cancer Society study of 421,000 cell-phone users, which led many in the media to conclude that mobiles are harmless. To date, "peer-reviewed scientific evidence has overwhelmingly indicated that wireless devices do not pose a risk," says John Walls, a spokesman for CTIA, a global wireless association.

There are problems with many of these studies, however. For starters, the Danish one — which reviewed the medical records of people who had signed up for cell phones from 1982 to 1995 — didn't include all the business users, who were among the earliest adopters and most intensive users, because they were not billed directly.

Also, the study looked only at tumors that were diagnosed by 2002 — not long after daily use of cell phones became widespread. Brain cancers can take several decades to develop, so it might be many years before a measurable bump in cancer rates shows up. "The latency period we have is far too short," says Dr. Siegal Sadetzki, a cancer researcher at Israel's Gertner Institute whose epidemiological studies have found some connections between cell-phone use and salivary-gland tumors. "And today, people are using the phone much more heavily."

Sadetzki served as Israel's principal investigator in the Interphone study, which was conducted over the past several years by 13 countries, most of them European. The Interphone results initially were to be published in 2006, but the final report has been postponed repeatedly, and the study investigators are reportedly deeply divided. In the U.S., which isn't one of the Interphone countries, the National Toxicology Program is launching studies of the health effects of cell phones. But peer-reviewed results won't be available until at least 2014.

That's a long time to wait for definitive data. The good news is that there are easy ways for those concerned about RF radiation to cut down on exposure. Using your cell phone's speaker or connecting a wired headset — while keeping the handset away from your body — drastically reduces RF exposure. (Bluetooth headsets help too, but they still emit some radiation.) And given the potentially more serious risks for children, who have thinner skulls than adults, parents might want to wait before handing teens their first phone — or at least ensure they use it mostly for texting.

Meanwhile, a start-up, Pong Research, is selling cell-phone cases that significantly reduce radiation exposure by channeling waves away from the head. Says Alfred Wong, Pong's chief scientist and a professor emeritus of physics at UCLA: "I think it's best to avoid as much of the risk as possible until the verdict is in."

That's exactly what Boland and other advocates of warning labels are arguing. It's true that cell-phone use has yet to be linked to cancer risk. "Scientifically speaking, we don't have the proof yet," says Sadetzki. "But as a public-health concern, I'm saying we definitely should adopt precautions."