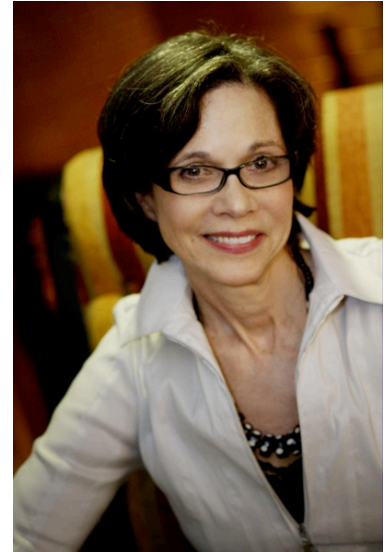


A Discussion with Dr. Devra Davis, Author of *Disconnect: The Truth About Cell Phone Radiation*

Lauren-Elizabeth Palmer

Dr. Devra Davis (Ph.D., MPH) has been designated a National Book Award Finalist for her insights on the environmental link with illness in *When Smoke Ran Like Water*. As an epidemiologist, Dr. Davis lectures at Georgetown, Harvard and the London School of Hygiene. She has also served as the Senior Advisor to the Assistant Secretary for Health and Human Services. In 2007, she founded the Environmental Health Trust, an organization which strives to educate the public about manageable environmental risks and potential policy solutions to address those risks. Her latest book, *Disconnect*, discusses the impact cell-phone radiation has on our bodies and on our lives.



Dr. Devra Davis

What is the problem at hand?

The problem is that, believe it or not, cell phones are dangerous. They emit radiation and, unfortunately, we hold them up to our brains. Its not really a very good idea. The current standards for radiation exposure are way too low; however, a lot of the phones we use today even exceed those low standards.

How should we approach the problem of cell phone radiation?

I want you to understand that I don't expect people to stop using cell phones, I use one myself, but you have to be smarter about how you use these tools. Cell phone use and our approach needs to be more like our approach to cars than to tobacco. We don't expect people to stop using cars. In many ways motor transport has revolutionized the world, but if you use them improperly cars can cause harm and even kill you. And I think the same thing is true for cell phones. They have revolutionized the world, the way we do commerce, the way we respond to emergency, but we've got to be smarter right now. I'm really concerned about how we use iPhones and even iPads as toys for kids. I mean it is very scary stuff.

What do you say to those who point out that cell phone radiation doesn't damage DNA?

Cell phone radiation is non-ionizing and too weak to break ionic bonds that hold together DNA. That is clear and there is no debate about it, but what the physics community will tell you is that it is nonsense to suggest that cell phone radiation can harm you or cause cancer because cell phone radiation is too weak to break ionic bonds. Well, it is too weak to break ionic bonds; however, it is not true that it doesn't damage DNA in other ways. It is certainly not the case that you have to have DNA damage in order get cancer and work has been done showing that you can get cancer without DNA damage. We don't know all of the answers, but I became convinced about 6 years ago that my assumption, which was that it is impossible for cell phones to be damaging, was wrong. Scientists don't like

to be wrong and we don't like to acknowledge that they follow fads.

What spurred your interest in this topic?

Well to be quite frank someone came up to me and said, "how come you're using your cell phone like that- don't you know it is dangerous?" and I thought that this person must be crazy. This person said "look, you have to understand, look at what they did in England". And so I looked and I came across a report done by Sir William Stuart which identified cell phones as potentially dangerous. Even then I thought well, it's the British and they're kind of eccentric. I was flabbergasted when I found out about Sir William Stuart. Sir William Stuart was the Director of Britain's Chemical and Biological Warfare Program. He was a top secret military researcher and a highly respected physician researcher. This was the equivalent of someone who worked for the British Defense Establishment, coming out and saying that he thought they had a problem. This all started when I was finishing my book, *The Secret History of the War on Cancer*, and I was floored to see there was a pattern here, just like the pattern that I had documented in my other book. The same problem that denied that tobacco could be a problem or asbestos could be a problem was operating here. Then frankly my first grandchild was born and I got really concerned.

What research has been done on this topic?

In the InterPhone study just released by WHO, people who used a phone an average of 30 minutes a day for ten years have double the risk of brain cancer. Remember, this necessitated ten years of use on the older phones so the newer phones may be less problematic, but the reality is that the latency period is

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ten years. That is why I'm so pleased that you are interested in this as most people in your generation have not been using a cell phone heavily for ten years, but most of them are using phones heavily now and that's why it is so important that this information reaches younger generations.

What results can we draw from the InterPhone study

Keep in mind that the phones were different too. The InterPhone studied brain tumors that occurred in people between 2002 and 2004 and we know that the latency for brain cancer is at least ten years and very few environmental carcinogens show a detectable increase in the population risk in ten years. The fact that you are finding a risk after ten years is worrisome.

We should not be putting microwave radios next to our brains and most people do not know that cell phones are two-way microwave radio. They are the same frequency but the power is quite different. A microwave oven uses 1,000 watts and a cell phone uses less than 1 watt, usually about 200-400 millivolts. So the power is much weaker and that's why people thought they had to be harmless, but in fact the biological work that has been done indicates that they are not harmless.

If this is the case, then why haven't we been put on high-alert by the government?

Well, the industry is and has been trying to keep this underwraps in part by conducting their own studies which tend to say cell phones are safe. Their studies seem to conflict with the results of other studies which have found cell phones to be dangerous, but you have to look closer. Often, you can have studies that appear to replicate that don't. Allan Frey showed that in 1970s that if you exposed the animals to the digital signals and then exposed the animals to the dye, the brain would turn blue, this showed that poration is occurring, the membrane is getting weakened. In an attempt to replicate that work, scientists were paid to replicate that study by injecting the dye into the stomach. In this study, the dye didn't go through the blood-brain barrier because it was never injected into the blood stream- it was injected into the stomach. So the color wouldn't replicate. There has been that type of pseudo-replication. So that most studies have been negative when looking at the biological impact and Henry Li has shown that most of these studies have been negative and most have been funded by industry. When you try and predict if a study will be negative or positive, its funding status, industry or non, will be an important factor which is an indication that this is not a level playing field.

How might we combat these effects?

The data that has come out of our opportunities to study people who were exposed to pollutants when they were children has taught us a great deal. If your exposure starts as a child, you tend to have a shorter latency and a stronger effect. For example, girls who were pre-teenagers at the Hiroshima and Nagasaki bombing will develop breast cancer at a higher rate and women who were in their 50s when the bombs fell do not develop breast cancer at all. So timing and exposure

The **TRUTH** About Cell Phone **RADIATION**,
What the **INDUSTRY** Has Done to Hide It, and
How to **PROTECT** Your **FAMILY**



Disconnect

can be more important than the dose. Very few people in the U.S. have been using cell phones heavily for ten years, unfortunately you have a growing number of people who do not even have a land line. Therefore, you must be smarter about how you are using cell phones.

Why doesn't the industry regulate itself?

There have been a couple of companies that are getting close to it and I think frankly that there is no absolutely safe cell phones just as there are no absolutely safe cars. The safest car would be the one that emits no green house gases and kills nobody ever. I don't think that exists, you can lower the green house gases and you can make them safer but there is a certain amount of risk that society has decided to accept and I think we could be in the same situation with cell phones. There is something else very radical people could do about cell phones and they could turn them off.

I struggled with this question, "is my book really a history or is still going on" and it is now obvious that this is still going on. Whenever scientists produce findings that are threatening to economic enterprises, whether those enterprises are steel manufacturing, cars or cell phones, they are not greeted with great applause. What happened to Sir William Stuart was very illustrative. He issued his report ten years ago and he chaired a committee, the Royal College of Physicians, to advise on cell phones so I think it was assumed that he was going to be saying, "don't worry about this, everything is fine". Instead, identified areas where there was not enough information and areas of concern, specifically involving exposure of the young to cell

phone radiation. Cell phone standards are out of date and were set to a very large man with a very big head who didn't talk very much. These standards were based on the temperature in his head, with the assumption that heat was a good measure of damage. So our current regulations are based on acute effects on a big guy and thus not really relevant to most people.

Could you elaborate on those standards?

Sure, the FCC sets the rates of safe radiation using the SAR, or the Specific Absorption Rate, in watts per kilogram and they say that a safe amount would be 1.6 watts per kilogram. But this measurement doesn't really measure how much radiation you are receiving, but rather how much you have to be exposed to before your ear heats up, or gets hot to the touch. So the first problem with this is that its based on temperature and we know that temperature and well, acute effects, and we don't really think temperature is such a good measurement. The second problem is that the SAR is measured on SAM, the semi-anthropomorphic man who weighs about 200 pounds and has an 11 pound skull. Well, we know that skull thickness can play a role and most of us don't have such big heads, especially children. These regulations were also set using the older phones, these regulations are about 17 years old now, and so we can't really expect them to be so relevant anymore.

How would you like to see new standards measured?

I think you have to set the standard for the smallest and most vulnerable group and you have to say that cell phones should not be used by young children. I think the developing brain needs to be protected. We have laws about seat belts and bike helmets because it is important that we protect our kids. Yet, we are exposing their brains to a sea of radio frequency radiation that didn't exist five years ago. Cell phone companies know that something is up and thus have begun to include warnings on their packaging. For example iPhone 4 [packaging] now says that if you put your iPhone 4 in your pocket you can exceed the FCC exposure guidelines.

Why are cell-phone companies including these warnings?

A journalist named Obrien, from the San Jose Mercury news, got a quote from someone in the industry which said that said, "well, our lawyers are telling us to do this". What does that mean it means somebody will be sued for health damages and they can say well we warned you. There are guidelines for safer use which say you can use a headset or a speaker phone. These warnings can be found on government websites and they are prefaced with the phrase, "if you are concerned about radiation", but they don't tell you that you should be concerned. These guidelines include using headsets and keeping cell phones out of pockets. Other countries have publicized these guidelines and even launched public service campaigns to raise awareness. The Israeli Dental Association has issued a report about cell phones and children. They report that in the past five years, one in five cases of malignant parotid gland tumors, a very rare tumor of the cheek which normally occurs in older people, has been found in someone

Guidelines for Safer Cell-Phone Use

1. USE A HEAD SET

Using a speaker, hands-free device, or earphones when speaking on a cell phone distances it from the body and head and minimizes your exposure to radiation.

2. DON'T CARRY A CELL PHONE ON THE BODY

Even when a cell phone is not in use, it emits radiation.

3. BEWARE OF A WEAK SIGNAL

When a cell phone is in standby mode or when the signal strength is weak or blocked, exposure to radiation increases. Limit your use at this time.

4. KEEP IT AWAY FROM CHILDREN

Studies consistently show that children are especially vulnerable to the effects of cell phone radiation. Generally, the younger the child, the more at risk they are.

5. DON'T LEAVE A CELL PHONE ON YOUR NIGHTSTAND

You may be sleeping, but your cell phone is busy at work emitting radiation.

under the age of 20.

How can we obtain safer guidelines for use?

We do need to have more surveillance studies, but we know enough to take some precautions now. Cell Phone companies are putting these warnings out for some reason, namely to protect themselves from liability. We want to recognize that we have lost our control groups at the same time there are things that can be done and I think some of the most stunning work has been done with human sperm. If you take sperm samples from a man and split them into two different test tubes and one is exposed to cell phone radiation and the other is not, the exposed group will die three times faster and have more markers of death. This has been done in several different laboratories around the world so that is sufficient proof that cell phone radiation has a biological effect.

References for studies and quotes cited in this article can be found online at www.disconnectbook.com