

## **Article on the Dangers of Cell Phones and EMT by Dr. Mercola,**

**Found on [www.mercola.com](http://www.mercola.com)**

Few people realize this, but brain cancer has now surpassed leukemia as the number one cancer killer in children.

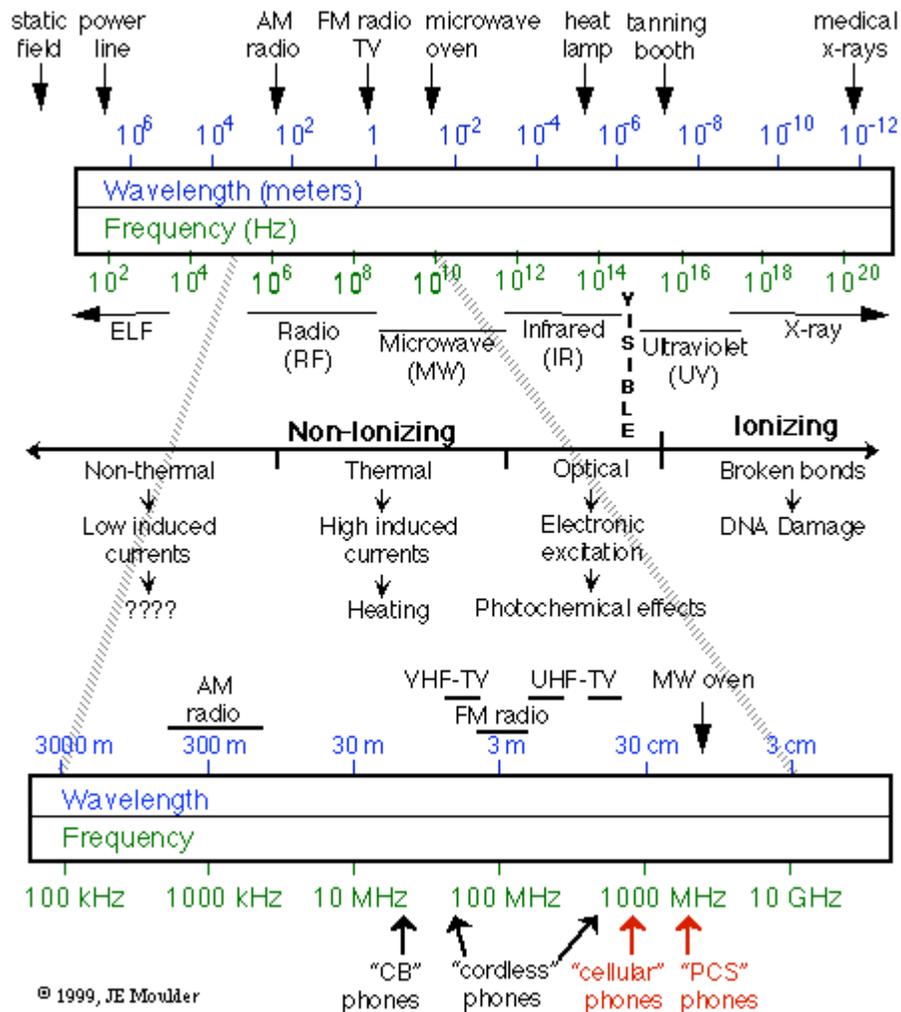
Australia has seen an increase in pediatric brain cancers of 21 percent in just one decade. This is consistent with studies showing a 40 percent brain tumor increase across the board in Europe and the U.K. over the last 20 years.

Today, we are quite literally awash in an invisible sea of radio frequencies (RF) and electromagnetic fields (EMF). Sources include home electrical wiring, electrical appliances such as TVs, electric blankets, electric alarm clocks, high tension electrical wires, and certainly mobile phones. More and more people are even reporting being “allergic” to EMF and radio waves.

In the video above, Dr. Tia states that for some reason, some people are more susceptible to the damage caused by EMR and radio frequencies than others, but that all children are at a much greater risk than adults.

But just HOW are electromagnetic fields and information-carrying radio waves capable of causing damage in your body?

## Radiation 101



Radio Frequencies (RF), Electro Magnetic Fields (EMF) and X-rays are all produced by electromagnetic sources, and are part of the electromagnetic spectrum. The difference between them is the frequency of their source.

Frequency is measured in hertz (Hz), which is the number of times a wave changes direction—by oscillating up and down—per second. 1 Hz, therefore, means one wave-cycle per second. 1 megahertz (MHz) equals 1,000,000 Hz (wave-cycles) per second.

All electromagnetic energy falls somewhere on the electromagnetic spectrum, ranging from extremely low frequency (ELF) radiation to microwaves, x-rays and gamma rays.

ELF fields include household appliances and overhead power lines. Scientists agree that ELF fields are hazardous to human health. They are considered 'probable carcinogens', and have been linked to cases of childhood leukemia, which used to be the biggest cancer killer among children – until now.

It's a proven fact that at extremely high frequencies, like that of x-rays, the electromagnetic waves have enough force to damage ionic and covalent bonds and damage DNA and other human tissue. This is known as ionizing radiation. Since X-rays have the power to damage the genetic material of cells, they can lead to cancer and birth defects—which is why you wear a lead vest during x-rays to protect the surrounding areas from unnecessary damage.

At lower frequencies, such as the microwave range used by mobile phones and base stations, the energy emitted is too low to damage chemical bonds (non-ionizing radiation). This is the primary argument used by those who believe that cell phone radiation is completely harmless and choose to live in ignorant bliss and refuse to change their unhealthy behavior.

Although **extremely low frequencies** (ELF's emitted from appliances and power lines) and **extremely high frequencies** (ultraviolet and gamma rays) **are known to be carcinogenic**, the scientific community is extremely hesitant to attach any kind of danger to the **in-between frequencies** where cell phones operate.

### **ALWAYS Remember How Truth Evolves**

I think it is important to stop and remind you how nearly every scientific advance evolves through the system: As I've said before, change is inevitable, and truth generally wins out in the end.

I believe Arthur Schopenhauer said it best when he declared that all truths go through three phases:

- First, it is ridiculed
- Second, it is violently opposed
- Finally, it is accepted as self-evident

So it is not at all surprising that most all "experts" refute the increasing evidence that is coming forth. Please remember that they also did this with cigarettes.

### **"Can You Hear Me Now?" – Modulated Radio Waves are All Around You**

The transmitter in your phone operates on about 0.75 watt (or much less, if you're close to a base station) to 1 watt of power, with 2 W at peak usage. This electric current running through the transmitter circuit also creates an electromagnetic field around it. As the electric current moves back and forth, the fields continue to build and collapse, forming electromagnetic radiation.

Thus, cell phone radiation is generated in the transmitter, and is emitted through the antenna in the form of radio waves. In the case of cell phones, the frequencies of these radio waves fall in the low microwave range.

Most experts base their cell phone safety recommendations on the basic sinusoidal wave, also known as a “carrier signal.” However, what they fail to recognize is that the danger does not come just from the carrier wave but also from a modulated signal that actually carries the data or your voice, which operates at a different frequency than the carrier signal.

**The problem is that many of your body’s processes also operate in this frequency range.**

In fact, your cells are loaded with receptors that specifically respond to these signals. So when you are exposed to these information carrying radio waves, the receptors are stimulated. Once that happens the delicate microtubular connections between your cells become impaired.

These crucial intercellular connections are responsible for communication between your cells. Once they start to fail, your cells “lock up” and retain far more heavy metals and free radicals, which can wreak havoc in your body.

One of the main concerns associated with cell phone use is that the phone is pressed to your head. Since electromagnetic radiation shoots out—at the speed of light—in all directions, this radiation can penetrate into your brain. And, as I discussed in another recent article, Cancer Institute Warns of Cell Phone Risks, electromagnetic radiation can penetrate *almost straight through* the entire brain of a 5-year old child.

### **Newer Technology More Harmful Than Older Ones**

Making matters worse, modern Digital Service and PCS cell phones—as opposed to analog cell phones—have **two additional low frequency magnetic fields associated with them.**

“Time division multiple access” (TDMA), is one of the systems currently used to increase the number of people who can communicate simultaneously with a base station. The process of TDMA results in a continuous low frequency pulsing at 8 to 34 Hz. **Some phones also have the energy-saving discontinuous transmission mode (DTX), which emits yet a third, even lower frequency** that pulses at 2 Hz when the user is listening and not speaking.

Since extremely low frequency radiation (ELF) has been shown to cause cancer—like leukemia—these additional ELF’s raise new questions.

Many warn that our current technology is in fact far more dangerous in this respect than previous analog models.

### **How Information-Carrying Radio Waves Impact Your Body**

Although cell phone radiation is of low intensity, it is the oscillatory similarity between this pulsed microwave radiation and certain electrochemical activities within your body that raises serious concerns, according to the study *Physics and biology of mobile telephony*, published in *The Lancet*.

Your body is essentially a very sensitive electromagnetic instrument, controlled by highly complex and orderly oscillatory electrical processes. Each one of these electro-biological processes vibrate at a specific frequency—some of which happen to be close to those used in modern GSM cell phone technology.

The pulsating, low-intensity microwaves from mobile phones can exert subtle, non-thermal influences on the human biology simply because microwaves are waves. As such, they have properties other than just intensity (which is the only part regulated by safety guidelines).

Therefore, much in the same way as a radio can receive interference, your biological processes can be interfered with by the oscillatory aspect of the incoming radiation.

**Highly organized electrical processes at the cellular level are especially vulnerable to interference from cell phone radiation, because their frequency happens to fall within the microwave range.**

**Many of these biological activities are influenced by your metabolism, meaning the effect of the radiation will be different from one person to another.**

The effect could also depend on the type of cell phone used, as different cell phones emit radiation at different frequencies.

Ultra-low intensity microwaves can affect processes as fundamental as cell division, and the TDMA frequencies of 8-34 Hz, and the DTX pulse frequency at 2 Hz, correspond to the frequencies of alpha and delta brain waves.

Therefore, your body has a two-fold sensitivity to cellular phone signals:

1. The microwave radiation itself, plus
2. The lower frequency oscillations of the TDMA and DTX signals.

In addition to that, there's also the packet rate of newer 3G phones, which is 250 Hz. One good example of how someone may be vulnerable to the non-thermal electromagnetic

influence is the ability of a flashing light (at about 15 Hz) to induce seizures in people with photosensitive epilepsy. It's not the energy absorption itself that causes the seizure. Rather it's because the brain recognizes the information being transmitted via the pulsating light, since it's delivered at a frequency your brain uses.

### How Tissue Damage Can Occur Without Heat

In 2004, a Swedish physicist named Bo Sernelius, stumbled across a surprising finding that suggests non-thermal mobile phone radiation can cause a **massive** increase in the forces that living cells exert on each other. He discovered that electromagnetic forces might act on cells by affecting the attractive forces between them, **without thermal heating**.

How?

Water molecules have poles of positive and negative electrical charge that create attractive forces between cells, known as van der Waals forces. Van der Waals forces are much weaker than chemical bonds. And, whereas chemical bonds need high frequency ionizing radiation in order to break, van der Waals forces are disrupted by much smaller thermal fluctuations. These intermolecular forces may be weak, but without them, life as we know it would be impossible.

Sernelius found that the water molecules inside cells will try to align their positive and negative poles with the alternating field produced by cell phone radiation. The result? They all end up pointing in the same direction, and this strengthens the van der Waals forces.

In the fields of 850 MHz (around the frequency used by mobile phones), the van der Waals forces leap—from a billionth-billionth of a Newton, to micro Newton strength—a massive jump of around 11 orders of magnitude.

Although it's still only theoretical, **this may be the missing link when trying to explain tissue damage from non-ionizing, non-thermal radiation**. Stronger attractive forces between cells can also make them clump together, and cause blood vessels to contract.

### Why Children are More Susceptible to Damage

A 2006 study performed by the University of Helsinki in Finland, found that **EMF from mobile phones at 902 MHz has an adverse effect on children's memory and recognition**, when measured by EEG.

Preadolescent children are particularly vulnerable because absorption of GSM microwaves is greatest in an object about the size of a child's head, due to the

“head resonance” effect. This is also why 900 MHz cordless phones are not safe, even though they aren’t transmitting all the time.

Radiation can also penetrate the thinner skull of an infant much more easily, which is why wireless baby monitors are such a menace, and should be avoided as well.

Additionally, the repetition frequencies of the TDMA and the DTX lie in the range of the alpha and delta brainwaves respectively. In a child, the alpha waves don’t replace delta waves as a stable activity until they’re about 12 years old.

Children’s immune systems are also degraded by this kind of radiation, making them more susceptible to illnesses of ALL kinds.

I’ve written more and more about this issue over the past two years, including an entire book on the subject, which is due out in 2009, as I truly believe this is a public health disaster waiting to be unleashed – much like smoking turned out to be.