

## **MOBILE PHONE: TO USE OR NOT TO USE?**

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Mobile phones are a mixed blessing for many of us. While some of us may miss the days of going out in public without hearing phones ringing all around us, most people do not miss being stranded on the side of the road with no way to call for help. The allure of having a convenient way to communicate has resulted in an increase in mobile phone usage over the years. Mobile phones have given rise to new rules of etiquette, and even new laws that regulate their use. Concerns about public safety and mobile phones are often in the news, making some people wonder if mobile phones are a good idea. Should you buy a mobile phone, or continue to use one? One of the big reasons for the rise in mobile phone usage is that you can call anywhere in the country for the same price that you can call your next-door neighbor. This lack of long distance charges has led to many people getting mobile phones who ordinarily may not have been interested. Also, many people now use their mobile phones exclusively, after canceling their home phone service. Having one less bill to pay is definitely a positive.

According to the CTIA, a wireless trade association, more than 270 million people in the United States own a mobile phone, so this is a trend that may eventually do away with land lines altogether. Some people are enjoying the GPS capabilities that some phones have, enabling them to track the location of their friends and family as they go about their daily lives. This is a great convenience if you want to meet up with a friend and want to know exactly where they are and who they're with. Mobile phones can provide a degree of safety that previous generations only dreamed of. These days, you can go anywhere in the world with a mobile phone, and with the proper service, be able to notify someone if you are in trouble, even if you are on top of a mountain in Nepal. Most people aren't mountain climbers, but cars do break down and when they do, it's nice to have a mobile phone to call the wrecker. Mobile phones also come in handy when you are meeting someone for the first time. If you feel threatened in any way, you have an emergency number right there in your hand.

Now, about the dark side of cell phones and the wireless world. Even though headsets are cheap and there is one for every phone made these days, you still see people holding the phone up to their heads. Besides the obvious distractions talking on a cell phone has when driving and rude usage (theaters etc), do cell phones pose a health threat? Well, it's too soon to tell. There are studies on both sides of the issue and frankly they just don't know. As we see in the drug business it takes about 20 years for the FDA to fess up to the harm that is done by some drugs, do you suppose the SEC will follow that pattern with the Cell Phone Radiation issue? On a more scientific side recent studies show that radiation emitted by cell phones cause headaches, confusion and sleep deprivation. The combination of these problems in kids create mood swings and broken concentration, this leads to depression. The hub on cell phones and depression expounds on this subject a little further. Don't underestimate the addictiveness and indirect health risks that the cell phone poses.

If you do a search about high blood pressure and the affect cell phones have on it, you'll find some interesting studies. If we take these studies at face value, then the cell phone is not the culprit, it's the electromagnetic waves it produces. If you already have high blood pressure, it doesn't take much to raise it a few more points. The possibility that magnetic fields do is not far fetched. If you want to take it a step further, you can also attribute high

blood pressure to phone calls where you are arguing with a spouse or friend. You see, the cell phone does have its pros and cons. The question is do the electromagnetic signals really have an affect on a person's mood? The answer to that question is still unclear. What is clear is high blood pressure is nothing to fool with. If there's any chance extended usage of cell phones aggravates your condition, take a closer look at the facts. Stop using your cell phone for a while and see what changes. There are new headsets, shields and other accessories that can help.

Recently, there has been concern that the use of hand-held cellular telephones may be linked with an increased risk of cancer. In response to this concern, and the rapidly rising number of cellular telephone users worldwide, studies have been conducted to determine whether there is an association between cellular telephone use and an increased risk of certain types of. The concern about an increased risk of cancer with cellular telephone use is related to the radiation that the device produces. Like televisions, alarm systems, computers, and all other electrical devices, cellular telephones emit electromagnetic radiation. In the United States, cellular telephones operate in a frequency ranging from about 800 to 2100 megahertz (MHz). In that range, the radiation produced is in the form of non-ionizing radiofrequency (RF) radiation. AM/FM radios, VHF/UHF televisions, and cordless telephones operate at lower radio frequencies than cellular phones. Microwave ovens, radar, and satellite-stations operate at higher radio frequencies. RF radiation is different from ionizing radiation, which can present a health risk at certain doses.

Ionizing radiation is produced by devices such as x-ray machines. It is not yet known whether the non-ionizing radiation emitted by cellular telephones poses a cancer risk. Because so many people use cellular telephones, it is important to learn whether RF radiation affects human health, and to provide reassurance if it does not. A cellular telephone user's level of exposure to RF radiation depends on several factors. These factors include the amount of cellular telephone traffic, the quality of the transmission, how far the antenna is extended, and the size of the handset. A cellular telephone's main source of RF energy is its antenna. Therefore, the closer the antenna is to the head, the greater a person's expected exposure to RF radiation. The amount of RF radiation absorbed decreases rapidly with increasing distance between the antenna and the user. The antenna of hand-held cellular telephones is in the handset, which is typically held against the side of the head while the phone is in use. The antenna of a car cellular telephone is mounted on the outside of the car, some distance from the user. Transportable cellular telephones or "bag phones" have an antenna in a portable unit separate from the handset. Most of the studies conducted on cellular telephone use and cancer risk have focused on hand-held models, since they deliver the most RF radiation to the user. The intensity of RF radiation emitted by cellular telephones also depends on the power level of the signal sent to and from the nearest base station. The farther a cellular telephone is from the base station antenna, the higher the power level needed to maintain the connection. This distance, in part, determines the amount of RF radiation exposure to the user. RF radiation can be harmful at high levels because it produces heat. Some people have speculated that the heat produced by RF radiation from hand-held cellular telephones may be associated with brain tumors, because the antenna is held close to the user's head. However, the heat generated by a cellular telephone is small in comparison with the large amount of heat generated by RF radiation in a microwave oven. It is generally agreed that the amount of heat produced by a cellular telephone is too small to cause cancer.

Researchers have focused on whether the RF radiation emitted by cellular telephones increases the risk of tumors, and, if so, how this type of radiation causes cancer. Because hand-held models are used close to the head, most of these studies have examined the risk of brain cancer. A study of 195,775 wireless communications workers was published in the March 2000 issue of the journal *Epidemiology*. These workers were exposed to RF radiation

during the manufacturing and testing of cellular telephones. The results of this study found no association between occupational RF radiation exposure and cancers of the brain and nervous system, or between RF radiation exposure and all types of lymphoma and leukemia. Researchers interviewed the participants about their hand-held cellular telephone use, including how long they had used a cellular telephone, the usual frequency of use, and which hand they normally used to hold the handset. The researchers did not find an increased risk of brain cancer among cellular telephone users. The results showed no evidence of increasing risk with increasing years of use, or average minutes of use per day. The study also found that brain tumors did not occur more often than expected on the side of the head on which participants reported using their phone.

Overall, most of these studies do not support a link between cellular telephone use and an increased risk of cancer. However, all of the studies have limitations, and it would be premature to conclude that the use of hand-held cellular telephones is not associated with cancer. One limitation is the relatively short amount of time that cellular telephones have been widely available. Cancers that take a long time to develop would not have been detected by these studies. Researchers suggest that future studies need to address the effects of long-term, heavy use of cellular telephones, and the differences between analogue and digital technologies. Analogue and digital telephones operate at different frequencies and power levels. Although many of the cellular telephones tested in recent studies used analogue technology, most cellular telephones today are based on digital technology. The Federal Communications Commission (FCC) is a Federal Government agency that regulates interstate and international communications by radio, television, wire, satellite, and cable. The FCC provides consumers with information on human exposure to RF radiation from wireless phones and other devices. The Commission's Web site, which is located at <http://www.fcc.gov/oet/rfsafety> on the Internet, allows consumers to find information about the specific absorption rate (SAR) of cellular telephones produced and marketed within the last 1 to 2 years.