

# Cell Phones:

## Questions and Answers about Safety

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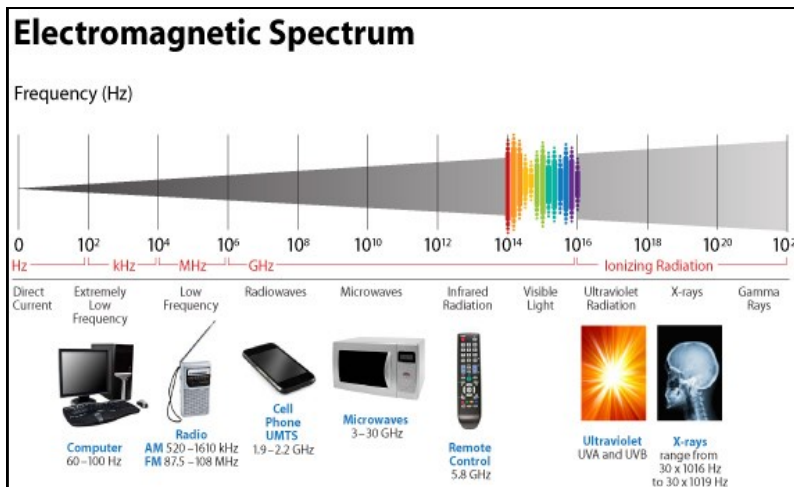
- All cell phones emit radiofrequency radiation (radiofrequency energy).
- Radiofrequency energy can be absorbed by parts of the body closest to where the phone is held.
- Current scientific research does not show a clear or consistent link between cell phone use and harmful health effects.
- There are limitations in the science. More research is needed in order to fully understand the health risks from cell phone use, particularly in children.
- It is wise to reduce your exposure to radiofrequency energy from cell phones whenever possible.
  - \* Use a hands-free device or speakerphone as much as possible.
  - \* Text instead of talking.
  - \* Avoid sleeping next to your cell phone. Keep it at least several feet from the bed.
  - \* When your phone is powered on, try to carry it away from your body in a purse, briefcase or backpack rather than in your pocket.



## Radio Frequencies & the Electromagnetic Spectrum

All cell phones emit radiofrequency (RF) energy, or radiation. RF energy is part of the electromagnetic spectrum. Energy on the electromagnetic spectrum is described in terms of its **frequency**. Frequency is the number of waves emitted each second and is expressed in **Hertz (Hz)**.

Other sources of RF energy include radio and television broadcasts, microwave ovens, GPS and Bluetooth devices, radar, baby monitors, wireless networks (wifi), and cordless phones. RF energy is **non-ionizing**. This means that it does not have a high enough frequency to damage cells in the body the way that ionizing radiation can. X-rays and sunlight are examples of ionizing radiation.



## Do Cell Phones Increase My Risk of Cancer?

For over 20 years, scientists have been studying whether using a cell phone increases your risk of cancer. **Overall, the scientific evidence does not show a clear or consistent increased risk of cancer from cell phone use.** Although scientists have not found a clear link between cell phone use and cancer, there are important gaps in the research, particularly regarding cell phone use among children. For this reason, most scientists agree that research on cell phones should continue. Scientists also agree that it is wise to reduce exposure to RF energy from cell phones whenever possible. For more information about the scientific studies on cell phones and cancer, refer to page 4.

## How Can I Reduce My Exposure?

Here are steps you can take to reduce your exposure to RF energy from your cell phone.

- ⇒ **Use a hands-free headset or speakerphone whenever possible.** Using a hands-free device or speaker mode moves the antenna in your phone away from your head, which decreases the amount of RF energy reaching your head. Corded hands-free devices emit virtually no RF energy. Wireless hand-free devices such as Bluetooth earpieces emit some RF energy but the levels are much lower than levels emitted by your cell phone. Nevertheless, only wear your wireless earpiece when you need it.
- ⇒ **Carry your phone safely and turn it off when it's not needed.** Carrying your phone in your pocket where the antenna is close to your body will expose you to more RF energy than if you carry your phone in a purse, briefcase or backpack. Even in standby mode, your phone emits RF energy because it is constantly searching for service or new messages. If you do not need your cell phone, turn it off.
- ⇒ **Don't Sleep with your phone.** Keep your phone at least a foot or two away from the bed. Your exposure is reduced dramatically as you move even a small distance away from the phone's antenna.
- ⇒ **Minimize using your phone when the signal is weak.** Phones need to work harder (emitting more RF energy) when making and maintaining a connection in areas with weak service.
- ⇒ **Make shorter phone calls.** Less time with a phone next to your ear means less exposure.
- ⇒ **Text instead of talking.** Cell phones emit less energy when sending text rather than voice calls.
- ⇒ **Don't buy a shield for your phone.** Don't buy a radiation shield. There are shielding products such as cloth pouches, phone case inserts and shielding film that claim to block RF energy emitted from your phone. Shields reduce the connection quality and can force the phone to work at a higher energy and emit more RF energy. This can increase your exposure.

## What About Effects Other Than Cancer?

Exposure to very high levels of RF energy can be harmful because of heating effects. This is the principle by which microwave ovens cook food. However, cell phones do not operate at the frequencies and energy levels needed to produce heating effects on the body. Research studies have looked at whether exposure to

cell phones has an effect on brain function, reproduction, sleep patterns, and heart rate. Some studies found no effects. Other studies found minor effects with no clear health significance. Taken all together, the research does not show consistent evidence of harmful health effects from exposure to RF energy at levels below those that cause heating.

## What About Children and Cell Phones?

Children may be at greater risk than adults from exposure to RF energy when using a cell phone. Their bodies and brains are still developing and are more vulnerable to exposures that could cause harm. Because their heads are smaller than those of adults, children have a relatively greater exposure to the field of RF energy cell phones. Children also have the potential to accumulate many more years of cell phone exposure than adults. So far, research studies have not identified higher cell phone health risks in children. However, in order to fully understand the risks to children, there needs to be more research focusing on children. Until more is known, it is wise to limit a child's use of cell phones as much as possible. The younger the child, the more at risk they may be from exposure.



## What Are The Safety Standards For Cell Phones?

The Federal Communications Commission (FCC) sets safety limits for RF exposure from cell phones. The FCC limits are based on standards developed by national and international organizations and protect from the heating effects of RF energy. The standards also include safety factors to account for uncertainties in the scientific knowledge. The FCC safety limit is set in terms of an allowable Specific Absorption Rate (SAR), which is a measure of the rate at which RF energy is absorbed by the body when using a cell phone. Cell phones sold in the US must show that they meet the FCC safety limit. Cell phone testing reports are available on the [FCC website](#) or the website for the cell phone manufacturer.



There are other cell phone safety issues to consider. Research has linked cell phone use while driving to an increased risk of a crash.

**Pull off the road before using your cell phone for calls or texts!**

## What About Using my Phone for Internet?

Your cell phone emits RF energy when you access the internet. If you are downloading a lot of information, such as streaming video or sending/receiving large files, the phone will be working hard and emitting more RF energy. However, your exposure will be lower than when you use the phone for talking if the phone is farther from your body.

## More about Cell Phone Studies and Cancer

**Overall, the scientific evidence does not show a clear or consistent increased risk of cancer from cell phone use.** The studies described below are important because they are recent, and they included lots of people who used cell phones, some for 10 or more years.

⇒ The Interphone Study involved 13 countries and looked at cell phone use among more than 6,000 adults with cancers in parts of the body that absorb the most RF energy emitted by cell phones (brain, salivary glands, acoustic nerve in the inner ear). The study concluded that **overall, cell phone use does not appear to be linked with an increase in cancer.** However, among the small number of heaviest cell phone users, there were indications of a possible increased risk of two types of brain cancer. However, scientists agree that this finding is not conclusive because of problems in how the study was designed, and how cell phone use was measured.

⇒ Two large studies from Denmark and the United Kingdom followed hundreds of thousands of people over time to see who developed cancer. Both studies failed to find links between cell phone use and cancer.

Although the large body of scientific evidence has not found a clear link between cell phone use and cancer, there are limitations in the research.

- ◆ Cancer has only been studied in people who began using cell phones 10-15 years ago. Some cancers take much longer than that to develop.
- ◆ Cell phone use among children has not been studied enough to fully understand the cancer risks.
- ◆ Cell phone technology is changing rapidly. Many cell phones in use today have technologies that did not exist at the time even the most recently published studies were conducted.
- ◆ The way we use cell phones is changing rapidly. We spend less time talking on our cell phones and more time texting, internet browsing and using social media.

For these reasons, scientists agree that research on cell phones should continue, particularly in children. Scientists also agree that it is wise to reduce exposure to RF energy from cell phones whenever possible, particularly in children. Refer to page 2 for suggested ways to reduce your exposure.

## For More Information

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[Federal Communications Commission \(FCC\)](#)  
[FCC Cell Phone FAQ](#)  
[FCC Cell Phone Exposure Limits](#)

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