



FAQs: Wireless Radiation

Overview

Children's developing minds and bodies make them particularly susceptible to the effects of their environment, including cell phone radiation which is why preventative approaches to reduce exposure in schools and child care facilities is recommended.

Although the research is still developing, some health studies have indicated there is a risk that long-term, high use of cell phones are linked to certain types of cancer and other health effects, including:

- brain cancer and tumors of the acoustic nerve (needed for hearing and maintaining balance) and salivary glands
- lower sperm counts
- head-aches and
- effects on learning and memory, hearing, behavior, and sleep

What are the potential health concerns associated with cellular phones, cell towers and wireless local area networking (WiFi)?

Radiation is the emission of energy from any source. Very high energy radiation, called ionizing radiation, can damage DNA in our bodies (hereditary material that contains genetic code) and may result in the development of cancer. Certain ultraviolet radiation (such as UVB) are ionizing.

Cell towers, cellular phones and WiFi all release radiofrequency (RF) waves, which are a type of non-ionizing radiation. Non-ionizing radiation does not directly damage DNA, but evidence of other possible health effects remains inconclusive. High levels of RF waves can cause tissues to heat up, which has been linked to cancer in some scientific studies, but the RF waves emitted from phones are not strong enough to do this. While the radiation released from a single device or tower hasn't shown significant cause for concern, children can be exposed to RF waves from many sources throughout their daily activities, and it is unclear what health effects may ensue from this cumulative exposure.

How much radiation are humans exposed to from cell phones?

The amount of radiation a cell phone user is exposed to depends on a number of factors concerning the usage conditions, including proximity to a cell tower, the number of other cell users in the area, how closely the phone is held to the body, and the type of phone being used. Cell phones use the least energy necessary, and factors such as being far from a cell tower or in close proximity to a lot of other cell users can require more energy, which means higher exposure to the user. When a cell phone is not being actively used, it emits much less energy.

The specific absorption rate (SAR) of a cell phone represents how much RF energy is absorbed into the human body during use. The highest SAR level for cell phones allowed in the United States (U.S.) is 1.6 watts per kilogram (W/kg) of body weight. Parts of Europe now have guidelines that are much lower than this.

Is radiation from cell phones regulated?

Yes, the Federal Communications Commission (FCC) requires cell phone manufacturers to ensure that their phones comply with the 1.6 W/kg or less exposure limit. However, the current guidelines on SARs were issued by the FCC in 1996, and cell phone use has increased dramatically since that time, especially among increasingly younger children.

Does cell phone use cause cancer?

There is no conclusive evidence that cell phone usage causes cancer, but most studies have focused on how RF radiation may directly promote tumor growth. There is much less research on whether they have any effect on individuals who are at a higher risk of cancer. Also, there are few studies on the effects of long-term cell phone usage. Various health and regulatory entities address the uncertainty in their own manner.



For instance, the World Health Organization's International Agency for Research on Cancer currently classifies RF radiation as a possible carcinogen, whereas the U.S. Food and Drug Administration states a lack of conclusive evidence that cell phones are connected to any health problems. While there is a lack of conclusive evidence of harm, there is also a lack of conclusive evidence of complete safety to children from current typical cell phone usage and radiation exposure. The [American Academy of Pediatrics](#) provides safety tips to best protect the children in your care from cell phone radiation.

What is a base station?

A base station is another word for cell tower. These are the tall structures that cell phones communicate with in order to make calls.

Does distance from a base station affect exposure to RF waves?

Base station RF waves are stronger in areas that are closer to them. Overall, however, base stations release much less energy than TV or radio broadcasting stations. In addition, antennas on base stations are mounted on very tall towers which reduces ground-level exposures. However, because proximity to cell towers is a factor in how much RF radiation a person is exposed to, careful siting consideration is necessary with regard to neighborhoods, schools and child care centers.

Does the government control how much RF energy can be released by these stations?

Yes. The Federal Communications Commission (FCC) has safety limits on how much of this energy can be released. Most base stations release a fraction of the RF energy that is allowed, and the FCC states that there is no cause for concern about the siting of these towers near schools. However, not much is known about RF radiation's effects on human health, and even less is known about its effects on children.

What is being done about WiFi radiation in schools and child care centers?

Different approaches have been implemented around the world, such as replacing WiFi with hard-wired internet connections in schools with young children, or informing citizens about the locations of wireless transmitters in public buildings. Schools in the U.S. may choose to replace WiFi with wired-in internet as a precautionary measure, but there is no national policy requiring this.

The Maryland Children's Environmental Health and Protection Advisory Council commissioned a report on WiFi radiation in schools and formally asked the FCC to revise its guidance regarding exposure limits, so that it is updated to reflect modern science. The American Academy of Pediatrics has also called for a revision because the current FCC guidelines do not address the particular vulnerability that pregnant women and children face.

Overall, there is no conclusive evidence that chronic proximity to WiFi or cellular base stations cause cancer, but a lack of research on long term exposure, as well as cumulative exposure including current cell phone usage levels (specifically among children and pregnant women), supports the adoption of precautionary measures in schools and child care centers.

Here are a few tips for reducing WiFi exposure in your home or child care:

- Replace WiFi with hard-wired internet connections
- Locate wireless transmitters as far away as possible from eating, sleeping and playing areas in your child care facility or home
- Limit both children's screen time and exposure from cell phones and other devices emitting radiation such as tablets, laptops, and video game players
- Offer infants and toddlers toys that promote healthy social and emotional development including books, puppets, blocks, and playdough

