N.C. Department of Health and Human Services

Occupational & Environmental Epidemiology

Cell Phones

Cell phones are used by 95% of American adults. There is some concern that exposure to non-ionizing radiation, also called radio frequency radiation, that is emitted by cell phones may result in an increased risk of cancer or other health effects.

- Recent National Toxicology Program studies have found evidence of cancer occurring in rats exposed to high levels of radio frequency radiation in the 2G and 3G range used in cell phones. The NTP studies found:
  - **Clear evidence of tumors in the hearts of male rats.** The tumors were malignant schwannomas.
  - **Some evidence of tumors in the brains of male rats.** The tumors were malignant gliomas.
  - **Some evidence of tumors in the adrenal glands of male rats.** The tumors were benign, malignant, or complex combined pheochromocytoma.

  For female rats, and male and female mice, it was unclear if tumors observed in the National Toxicology Program studies were associated with radio frequency radiation used by cell phones.
- The Food and Drug Administration (FDA) maintains that the weight of scientific evidence has not linked cell phones with any health problems.

FDA says that while some researchers have reported biological changes associated with RF energy, these studies have failed to be replicated, and the majority have failed to show an association between exposure to radiofrequency from a cell phone and health problems.
- A major review by the World Health Organization on non-ionizing radiation is expected to be released in 2020.
- Newer 5G technology is being introduced in the U.S. This technology uses higher frequencies and operates on line of sight, thus requiring more transmission devices to cover similar geographic areas as current networks, but the higher frequencies may be less penetrating to the body.

Cell Phone Safety Tips for Families

The American Academy of Pediatrics (AAP) recommends the following cell phone safety tips for children and teenagers. The AAP also reminds parents that cell phones are not toys; and are not recommended for infants and toddlers to play with.

Tips include:

- Use text messaging when possible and use cell phones in speaker mode or with the use of hands-free kits.
- When talking on the cell phone, try holding it an inch or more away from your head.
- Make only short or essential calls on cell phones.
- Avoid carrying your phone against the body like in a pocket, sock, or bra. Cell phone manufacturers cannot guarantee that the amount of radiation you are absorbing will be at a safe level.
- Do not talk on the phone or text while driving. This increases the risk of automobile crashes.
- Exercise caution when using a phone or texting while walking or

performing other activities. “Distracted walking” injuries are on the rise.

- If you plan to watch a movie on your device, download it first, then switch to airplane mode while you watch in order to avoid unnecessary radiation exposure.
- Keep an eye on your signal strength (i.e. how many bars you have). The weaker your cell signal, the harder your phone has to work and the more radiation it gives off. It's better to wait until you have a stronger signal before using your device.
- Avoid making calls while in cars, elevators, buses. A cell phone works harder to get a signal through metal, increasing its power.
- Remember that cell phones are not toys or teething items