Wireless Devices and Health Concerns

While there is no federally developed national standard for safe levels of exposure to radiofrequency (RF) energy, many federal agencies have addressed this important issue. In addition to the Federal Communications Commission, federal health and safety agencies such as the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) have been actively involved in monitoring and investigating issues related to RF exposure. For example, the FDA has issued guidelines for safe RF emission levels from microwave ovens, and it continues to monitor exposure issues related to the use of certain RF devices such as cellular telephones. NIOSH conducts investigations and health hazard assessments related to occupational RF exposure.

Federal, state and local government agencies and other organizations have generally relied on RF exposure standards developed by expert non-government organizations such as the Institute of Electrical and Electronics Engineers (IEEE) and the National Council on Radiation Protection and Measurements (NCRP). Since 1996, the FCC has required that all wireless communications devices sold in the United States meet its minimum guidelines for safe human exposure to radiofrequency (RF) energy. The FCC's guidelines and rules regarding RF exposure are based upon standards developed by IEEE and NCRP and input from other federal agencies, such as those listed above. These guidelines specify exposure limits for hand-held wireless devices in terms of the Specific Absorption Rate (SAR). The SAR is a measure of the rate that RF energy is absorbed by the body. For exposure to RF energy from wireless devices, the allowable FCC SAR limit is 1.6 watts per kilogram (W/kg), as averaged over one gram of tissue.

All wireless devices sold in the US go through a formal FCC approval process to ensure that they do not exceed the maximum allowable SAR level when operating at the device's highest possible power level. If the FCC learns that a device does not confirm with the test report upon which FCC approval is based – in essence, if the device in stores is not the device the FCC approved – the FCC can withdraw its approval and pursue enforcement action against the appropriate party.

Several US government agencies and international organizations work cooperatively to monitor research on the health effects of RF exposure. According to the FDA and the World Health Organization (WHO), among other organizations, to date, the weight of scientific evidence has not effectively linked exposure to radio frequency energy from mobile devices with any known health problems.

The FDA maintains a website on RF issues at www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm**.** The World Health Organization (WHO), which has established an International Electromagnetic Fields Project (IEFP) to provide information on health risks, establish research needs and support efforts to harmonize RF exposure standards, provides additional information on RF exposure and mobile phone use at www.who.int/mediacentre/factsheets/fs193/en/index.html. For more information on the IEFP, go to www.who.int/peh-emf/en.

Some health and safety interest groups have interpreted certain reports to suggest that wireless device use may be linked to cancer and other illnesses, posing potentially greater risks for children than adults.

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While these assertions have gained increased public attention, currently no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses. Those evaluating the potential risks of using wireless devices agree that more and longer-term studies should explore whether there is a better basis for RF safety standards than is currently used. The FCC closely monitors all of these study results. However, at this time, there is no basis on which to establish a different safety threshold than our current requirements.

You can find additional useful information and links to some of the other responsible organizations on the FCC's website at www.fcc.gov/general/radio-frequency-safety-0.

What You Can Do

Even though no scientific evidence currently establishes a definite link between wireless device use and cancer or other illnesses, and even though all cell phones must meet established federal standards for exposure to RF energy, some consumers are skeptical of the science and/or the analysis that underlies the FCC's RF exposure guidelines. Accordingly, some parties recommend taking measures to further reduce exposure to RF energy. **The FCC does not endorse the need for these practices,** but provides information on some simple steps that you can take to reduce your exposure to RF energy from cell phones**. For example,** wireless devices only emit RF energy when you are using them and, the closer the device is to you, the more energy you will absorb.

Some measures to reduce your RF exposure include:

- Use a speakerphone, earpiece or headset to reduce proximity to the head (and thus exposure). While wired earpieces may conduct some energy to the head and wireless earpieces also emit a small amount of RF energy, both wired and wireless earpieces remove the greatest source of RF energy (the cell phone) from proximity to the head and thus can greatly reduce total exposure to the head.
- Increase the distance between wireless devices and your body.
- Consider texting rather than talking - **but don't text while you are driving**.

Some parties recommend that you consider the reported SAR value of wireless devices. However, comparing the SAR of different devices may be misleading. First, the actual SAR varies considerably depending upon the conditions of use. The SAR value used for FCC approval does not account for the multitude of measurements taken during the testing. Moreover, cell phones constantly vary their power to operate at the minimum power necessary for communications; operation at maximum power occurs infrequently. Second, the reported highest SAR values of wireless devices do not necessarily indicate that a user is exposed to more or less RF energy from one cell phone than from another during normal use (see our guide on SAR and cell phones at www.fcc.gov/guides/specific-absorption-rate-sar-cell-phones-what-it-means-you). Third, the variation in SAR from one mobile device to the next is relatively small compared to the reduction that can be achieved by the measures described above. Consumers should remember that all wireless devices are certified to meet the FCC maximum SAR standards, which incorporate a considerable safety margin. (Information about the maximum SAR value for each phone is publicly available on the FCC website at www.fcc.gov/general/specific-absorption-rate-sar-cellular-telephones.)

Other Risks

Some studies have shown that wireless devices might interfere with implanted cardiac pacemakers if used within eight inches of the pacemaker. Pacemaker users may want to avoid placing or using a wireless device this close to their pacemaker.

Consumer Help Center

For more information on consumer issues, visit the FCC's Consumer Help Center at www.fcc.gov/consumers.

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Last Reviewed 10/15/19

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