Wireless (Wi-Fi) Safety Fact Sheet

Vanderbilt Environmental Health and Safety
Telephone: 615-322-2057
www.vumc.org/safety

Wi-Fi is a common term for wireless local area networking of electronic devices based on the Institute of Electrical and Electronics Engineers (IEEE) 802.11 standards. Wireless networks use non-ionizing radio waves to communicate information in the same way as cell phones and two-way radios. Local area networks typically consist of one or more wireless access points (hardware devices) that route communication to and from the internet from multiple devices in the area that support data transfer to the access points through wireless adapters.

Wi-Fi Safety:
Because Wi-Fi systems emit high-frequency electromagnetic radiation during data transfer [normally 2.4 gigahertz (GHz) or 5 GHz], there may be some concern regarding the safety of being located in the area of Wi-Fi networks. The reality is that these systems generally emit at a very low power, typically about 0.1 Watt emitted from both the computer antenna and the router antenna. The power falls off very rapidly beyond a few inches from the antenna. (In comparison, cell phones emit between 0.6 to 3 Watts at 1.9 GHz). It has been estimated that the amount of radiation from a 20-minute cell phone call is equivalent to a year's worth exposure to Wi-Fi.

The World Health Organization, which has examined the topic of exposure to low levels of non-ionizing radiation in depth, says: "In the area of biological effects and medical applications of non-ionizing radiation approximately 25,000 articles have been published over the past 30 years. Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, **the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low-level electromagnetic fields**. However, some gaps in knowledge about biological effects exist and need further research."

The United Kingdom Health Protection Agency conducted the largest and most comprehensive measurement studies to date to assess exposures of children to radiofrequency electromagnetic fields from wireless computer networks. This agency concluded that radiofrequency exposures were well below recommended maximum levels and that there was "no reason why Wi-Fi should not continue to be used in schools and in other places."

In conclusion, exposure to Wi-Fi radiation is presently considered to be very safe. Studies on the possible health effects caused by long-term exposure to sources of non-ionizing radiation (like Wi-Fi) continue to be conducted. Some good websites for further information regarding the health effects of non-ionizing electromagnetic radiation are listed below:

NIH – National Cancer Institute
https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet
World Health Organization
https://www.who.int/peh-emf/en/

February 2019