

Spotlight On Safety

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Radiofrequency Exposure from Wireless LAN

What is Wi-Fi?

Wireless computers have become commonplace in our lives. The wireless technology that we use every day to surf the internet and complete tasks relies upon an extensive network of fixed antennas, or base stations (Wi-Fi Access Point devices), relaying information with radiofrequency (RF) signals within the ranges of 2.4-2.5 GHz and 5.7-5.9 GHz.

What are the regulatory requirements?

International exposure guidelines have been developed to provide protection against established health effects from RF fields by the International Commission on Non-Ionizing Radiation Protection (ICNIRP, 1998) and the Institute of Electrical and Electronic Engineers (IEEE, 2005). In California, the regulatory limits for RF exposure can be found in the California Code of Regulations, Title 8, subchapter 7, group 14, article 104 §5085.

What are the health effects of RF exposure from Wi-Fi?

The only identified health effect from RF fields is an increase in body temperature ($> 1\text{ }^{\circ}\text{C}$) from exposure at very high field intensity. The levels of RF exposure from base stations and wireless networks are so low that the temperature increases are insignificant and do not affect human health.

Cancer: Media or anecdotal reports of cancer clusters around mobile phone base stations have heightened public concern. Given the widespread presence of base stations in the environment, it is expected that possible cancer clusters will occur near base stations merely by chance. Studies examining a potential relationship between RF transmitters and cancer have not provided evidence that RF exposure from the transmitters increases the risk of cancer.

Other effects: Human and animal studies examining brain wave patterns, cognition and behavior after exposure to RF fields, such as those generated by mobile phones, have not identified adverse effects. RF exposures used in these studies were about 1000 times higher than those associated with general public exposure from base stations or wireless networks. No consistent evidence of altered sleep or cardiovascular function has been reported.

From all evidence accumulated so far, no adverse short or long-term health effects have been shown to occur from exposure to RF signals produced by base stations. Since wireless networks produce generally lower RF signals than base stations, no adverse health effects are expected from exposure to them.

Electromagnetic Hypersensitivity

Some individuals have reported that RF signals from Wi-Fi and other low-level sources of RF fields can trigger allergy-like reactions – a phenomenon called electromagnetic hypersensitivity. While the distress of electromagnetically hypersensitive individuals is very real, controlled studies have failed to connect their symptoms to the exposure to fields. These studies show that the symptoms appear to be associated with whether the individual believes that he or she is being exposed, rather than the actual exposure.

Further reading

- Foster KR. [Radiofrequency exposure from wireless LANs Utilizing Wi-Fi Technology](#). Hlth Phys 92:280-289; 2007.
- International Commission on Nonionizing Radiation Protection. [General approach to protection against nonionizing radiation](#). ICNIRP Statement in Hlth Phys 82: 540-548; 2002.
- World Health Organization. Electromagnetic fields and public health: Base stations and wireless technologies; May 2006. WHO Fact Sheet. Available at who.int/mediacentre/factsheets/fs304/en/index.html. Accessed 2 April 2007.
- UC Riverside EH&S. Non-Ionizing Radiation User Guide: 4-6; October 2018. Available at <https://ehs.ucr.edu/sites/g/files/rcwecm1061/files/2020-03/Non-ionizing%20Radiation%20guide.pdf>.