All you have to know about wifi and radiation

Wi-Fi is everywhere

- Wi-Fi makes life easier

Wi-Fi makes our life easier. We can get online from a coffee shop or from the living room. We are not tethered to a big computer that is physically linked to the Internet. But that convenience comes at a price.

- invisible radio waves through our space and body.

Dozens of wireless networks are streaming invisible radio waves through our space and body. (So are the phones, computers, Bluetooth speakers and other devices that connect to them.) It's logical to wonder—and worry—about what effect all that wireless energy might have on our health.

- what effect all that wireless energy might have

There are a staggering number of articles on the Internet trumpeting the dangers of "Wi-Fi radiation" and how risky it is to our health.

But while the volume and ubiquity of wireless devices is a new phenomenon, the kind of radiation they produce has been the subject of scientific scrutiny for decades.

Research on Wi-Fi

- The research goes back at least to the 1950s

The research on radio waves and human health goes back at least to the 1950s, when there were concerns about Navy servicemen being exposed to powerful shipboard radar.

- Radiation promote cancer in high frequency

All that research has taught us that at high frequencies, electromagnetic radiation can promote tumor growth and cancer. The sun's ultraviolet rays and their links to skin cancer are one example.

- Skin burns , not cancer in terms of low frequency

Even at lower frequencies, very high levels of electromagnetic radiation exposure can hurt you. "But we're talking skin burns, not cancer or tumors," says Kenneth Foster, a professor of bioengineering at the University of Pennsylvania.

If you don't want to listen the a single sentence further, that's fine, we'll spoil the whole presentation for you: Wi-Fi poses absolutely no threat to anyone's health. If you're curious as to why , I am happy to outline exactly what's going on.

Not All Radiation Is Equal

To understand why Wi-Fi is not a danger to your health, you need to understand some fundamentals about radio communication and the radiation that makes it possible.

- Ionizing and non-ionizing radiation
- Long wavelengths and short wavelength

The most critical concept when it comes to talking about radiation is the distinction between ionizing and non-ionizing radiation. Ionizing radiation is the dangerous stuff and includes x-ray radiation, gamma radiation, and some amount of ultra-violet light on the high end of the ultra-violet spectrum. The key element here is the wavelength of the radiation type.

Distance and Power Matter

- Powerful at a very close range

Hearing the last paragraph of the previous section you might be saying "Ah hah! Microwaves! Microwaves are bad, they make things very hot and they could burn you!" That's absolutely true. You would not want to build a human size microwave oven and stand inside it. Nor would you particularly enjoy being the target of the crowd-dispersing microwave cannons built and deployed by the U.S. military.

In those cases, however, there are two important things to note. The person exposed to the non-ionizing microwave radiation would be exposed to a very high power dose at a very close range. The magnetron in your average consumer microwave produces about 700 watts of microwave energy, and that microwave discharge is safely contained within the body of the microwave thanks to proper shielding. Even if the microwave was malfunctioning and the shielding was beginning to fail, you wouldn't even feel anything standing in the same room as the device.

- Inverse-square law.

Not only are these devices of radically different operating powers, but they are equally at the mercy of the Inverse-square law. The Inverse-square law is a physical law which states that the quantity or intensity of linear-wave radiation is directly inverse to the distance the observing/affected body is from the source of the radiation. In the illustration above, you can see how the further the given area (A) is from the source of the radiation (S), the less exposure it receives. This law applies to radio, microwaves, visible light, and all manner of waves we experience around us in the natural world.

Because of this physical law, even if holding a Wi-Fi router directly against your forehead was very dangerous (and, we assure you, it is not) working in your home office 45 feet away from the Wi-Fi router would not be dangerous simply because the microwave radiation of the already minuscule 1 watt Wi-Fi router would have radically decreased in intensity. When you factor in that the Wi-Fi radiation is already harmless, you see that there is no situation in which the Wi-Fi signal from your router, your laptop, your media center, or any other Wi-Fi device in your home could possibly hurt you.