

# KEEP AN EYE ON



JANET GUAN Staff Writer

The word radiation seems to take on a negative connotation when mentioned. However, the word simply stands for energy moving through space. Nearly everything that exists emits radiation at various levels. Just as multiple amounts of radiation exist, certain levels of it can be beneficial or detrimental.

Radiation emitted by wireless fidelity (Wi-Fi) falls under radio frequency radiation, which are similar to the waves sent out by radios and microwaves. They are not as strong when compared to other types of radiation, such as those emitted by X-ray machines, but many express concern that exposure may have harmful consequences to the body, such as cancer.

Wireless technology has furthered convenience, but whether Wi-Fi can be harmful or not draws the line for opinions towards this widely used technology. Many find that the radiation produced from Wi-Fi is minimal and will not cause significant damage. After all, its wavelength ranges fall in the same category as radio waves, which have not been deemed harmful. Yet others worry that constant exposure to Wi-Fi radiation may induce unwanted side effects that stronger emissions of radiations produce, such as cancer. AHS recently installed a Wi-Fi system, exposing nearly 3,000 students to debatable waves. Neither side has procured definite evidence of Wi-Fi's danger or safety; time will only tell whether wireless internet poses a risk.

# FUTURE WAVES OF AMERICA

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To many, the thought of radiation exposure strikes fear into the heart. The deadly waves are known to cause health complications in generations of humans. Yet, another side exists to the destructive force. Over the past years, scientists have been harnessing the power of radioactive waves for practical applications in technology such as cell phones, Wi-Fi and nuclear energy. Although these forms of technology are powerful and convenient, some are anxious about handling a potentially dangerous substance—is it worth it?

Cell phone waves are one use of radiation that is often debated. Theoretically, extended use of cell phones may be harmful as they emit radio waves that can be absorbed by tissue, but the many studies on this matter have produced inconsistent or inconclusive results. Currently, the Food and Drug Administration (FDA) states that mobile phones are not associated with any adverse health complications, but people continue to take aggressive stances on both sides of the issue. Concerns have been raised particularly about undiscovered long-term effects but with the mass proliferation of mobile phones in recent times, it is difficult to imagine a future without them.

Another type of radiation that people are continually exposed to is Wi-Fi signals. Wi-Fi is beginning to become ubiquitous in U.S. households and is even being installed in some school districts. As with cell phone signals, the effects of Wi-Fi exposure on health need further research, but most existing studies, such as one conducted by the World Health Organization in 2011, conclude that no major health complications will develop. According to the U.S. Environmental Protection Agency (EPA), households are exposed to about 200 millirems of radiation annually. However, it will take at least 5,000 millirems of exposure for even minor health effects to occur. A point of contention is young children growing up in an environment permeated with Wi-Fi; they are known to be more susceptible to radiation. However, taking students away from computers sounds regressive to some.

Radiation plays a larger part in modern life than many realize. As technology centered around radiation continues to spread and develop, only the future can tell what unseen consequences it may have on people.

# FREQUENCIES TOO FREQUENT

JENNY LEE Features Editor

*Crack! Scribble-scribble. Tap, tap, tap.* Down by the tennis courts, tennis balls fly furiously over the nets as rackets swing at them. Up in C building, a hardworking girl scrawls in her notebook paper, dedicatedly jotting down notes. Across the campus in S building, a bored kid stares off into space, tapping his pencil rhythmically to the monotonous droning of his teacher. Above him, a substance is emitting from the ceiling, submerging the room in its presence. Leaking from multiple walls and classrooms, it flows across campus foliage and concrete floors. Waves from the AHS' newly installed Wi-Fi system engulf each student, whether he or she is working in the gym or sitting behind a desk.

Tasteless, soundless and invisible to the eye, electromagnetic waves begin seeping through every nook and cranny of the 21st century. As technology begins to soar, so does the amount of radiation. This now ubiquitous technology allows the average Joe to run devices like cameras, video-game consoles, printers and audio players with exceptional convenience.

Many wireless devices run on a frequency of 2.4 GHz, the same frequency commonly used in microwaves; directed at the food, these waves “excite” certain substances in water and fat, triggering a scientific process called dielectric heating, which heats up the food. Note that the human body also consists of water and fat. With this in mind, what side effects could Wi-Fi radiation have on the health of families and students?

“I have no doubt in my mind that at the present time, the greatest polluting element in the earth's environment is the proliferation of electromagnetic fields. I consider that to be far greater on a global scale, than warming, and the increase in chemical elements in the environment,” two-time Nobel Prize nominee, Robert O. Becker said, according to an interview conducted in 2000 by Linda Moulton Howe.

To many born in the nineties, Wi-Fi seems engraved into their lifestyles because the majority of the population in today's generation not only knows about wireless devices, but also uses them on a daily basis. Scientists agree that these waves are a danger at high levels and many hope that the low levels emitted in family households are safe. However, these waves of radiation may seem harmless now, but after a couple more decades, its safety grows questionable.

In an executive report published in 2009, Andrew Goldsworthy, a retired lecturer from the prestigious Imperial College London, stated that weak electromagnetic fields act on the calcium ions lodged between our cells. These leakages may cause a range of disorders from DNA damage to stress headaches and sleeping difficulties.

Contrary to popular belief, electromagnetic waves do not need to be strong to cause damage. Goldsworthy mentioned in the Foreword of his 2012 article that “all this happens at levels of radiation that the cell phone companies tell us are safe because the radiation is too weak to cause significant heating. This is the only criterion that they use to assess safety.”

This issue poses a far greater concern because it has been proven that children are more susceptible to radiation than adults. A research in the past found that children living in the front of the Skruna Radio Location Station had a less developed memory and attention span; their reaction time had slowed and their neuromuscular apparatus endurance decreased.

“People who start mobile phone use before the age of 20 had more than five-fold increase in glioma, [a cancer in the nervous system,]” University Hospital Professor Lennart Hardell said, according to *The Independent*.

The present young generation is the experimental lab rat for the future. In fact, the probable consequences has urged officials from Germany, France, the United Kingdom, Russia and Finland to express their concerns toward citizens and advise against wireless networking.

AHS has recently installed a new school Wi-Fi system. Every day, nearly 3,000 students file into the school, affected by the cumulative radiation exposure. It may be low, but the reality is that every student is exposed to this radiation from 7:45 AM to 2:41 PM—nearly 7 hours every day, more so if the student has a Wi-Fi router at home. How this chronic exposure will affects us is a question we should be wary of.

MOOR graphics by GEN THIPATIMA

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