Wireless Radiation

Frying Your Brains?

Radio waves, microwaves, and infrared all belong to the

Electromagnetic radiation spectrum. These terms reference ranges of radiation frequencies we use every day in our wireless networking environments. However, the very word radiation strikes fear in many people. Cell towers have sprouted from fields all along highways. Tall rooftops harbor many more cell stations in cities. Millions of cell phone users place microwave transmitters/receivers next to their heads each time they make a call. Computer network wireless access points have become ubiquitous. Even McDonald’s customers can use their machines to browse the Internet as they eat burgers. With all this radiation zapping about, should we be concerned? The electromagnetic spectrum ranges from ultra-low frequencies to radio waves, microwaves, infrared, visible light, ultraviolet, x-ray, and up to gamma ray radiation. Is radiation dangerous? The threat appears to come from two different directions, the frequency and the intensity. A preponderance of research has demonstrated the dangers of radiation at frequencies just higher than those of visible light, even including the ultraviolet light used in tanning beds, x-rays, and gamma rays. These frequencies are high (the wavelengths are small enough) to penetrate and disrupt molecules and even atoms. The results range from burns to damaged DNA that might lead to cancer or birth defects. However, radiation’s lower frequencies ranging from visible light (the rainbow colors you can see), infrared, microwave, and radio waves have long waves unable to penetrate molecules. Indeed, microwave wave lengths are so long that microwave ovens employ a simple viewing screen that can block these long waves and yet allow visible light through. As a result, we can watch our popcorn pop without feeling any heat. Keep in mind that visible light consists of radiation frequencies closer to the danger end of the spectrum than microwave light. Lower radiation frequencies can cause damage only if the intensity is strong enough, and that damage is limited to common burns. Microwave ovens cook food by drawing 800 or more watts and converting them into a very intense (bright) microwave light. Cellular telephones, by comparison, draw a very tiny amount of current from the phone’s battery and use the resulting microwaves to transmit a signal. In fact, the heat you feel from the cell phone is not from the microwaves but rather from its discharging battery. It is extremely unlikely that either device can give the user cancer, though a microwave oven could cause serious burns if the operator disables its safety features.