

Maryland Environmental Group In The Dark About Radiofrequencies And WiFi



By Josh Bloom — February 28, 2017

The Maryland State Children’s Environmental Health and Protection Advisory Council wants WiFi restricted in state schools because of cancer concerns. Just two problems with that: (1) Officials have no idea what they're talking about, and (2) officials have no idea what they're talking about.



We're all dead. Photo: eBay

It's a good thing that there's always someone around to scare us, or we couldn't possibly be perpetually scared. Fortunately, the Maryland State Children’s Environmental Health and Protection Advisory Council (CEHPAC) stepped up to the plate with the bases loaded (by using the word "children"). CEHPAC wants you to believe that WiFi in your kid's school is going to give them cancer, and has issued a [press release](#) ^[1] recommending that schools limit or eliminate WiFi.

The group's press release was equal parts propaganda, bad science, and idiocy. A few examples:

- *The Maryland State Department of Education should recommend that local school systems consider using wired devices,” “WiFi can be turned off” and instead “a wired local area network (LAN) can provide a reliable and secure form of networking...without any microwave electromagnetic field exposure.”*
- *New construction and renovations: “If a new classroom is to be built, or electrical work is to be carried out in an existing classroom, network cables can be added at the same time, providing wired (not wireless) network access with minimal extra cost and time.”*

- *Have children place devices on desks to serve as barrier between the device and children's bodies; Locate laptops in the classroom in a way that keeps pupil heads as far away from the laptop screens (where the antennas are) as practicable*

The group cites a [study](#) [2] that "demonstrates" that cell phone radiation is linked to cancer in mice and rats, with a few minor "issues," as [summarized](#) [3] on the healthychildren.org website:

"This study was only done on rats. While rats can be good test subjects for medical research, they are not the same as humans. We do not yet know if the same results would occur in people."

Comment: It is not clear that anything whatsoever happened to the rats (see below), and if it did, it occurred under conditions that are irrelevant to what humans experience:

"The rats were exposed to very large amounts of radiation—nine hours a day, seven days a week, for two years. This is far more than most people spend holding their cell phones."

Comment: Why not just roast them in a microwave oven on high for two hours, and then run them over with a bulldozer?

*"More male rats developed cancerous tumors after being exposed to the radiation than female rats. **Some of the rats who developed tumors lived longer** than the control group rats that were not exposed to radiation."*

Comment: Looney Tunes time. When you see nonsensical conclusions like this, it is pretty safe to assume that whatever is being observed is not real; it is an artifact of the study or faulty statistics. Your BS detector should be going off scale.



What seems to be behind this phony scare is that CEHPAC appears to lack even a fundamental understanding of the electromagnetic spectrum - the frequency, **(1)** length, and energy of all radio waves (Figure 1). Hopefully, after reading this, you will have enough knowledge to see so for yourself.

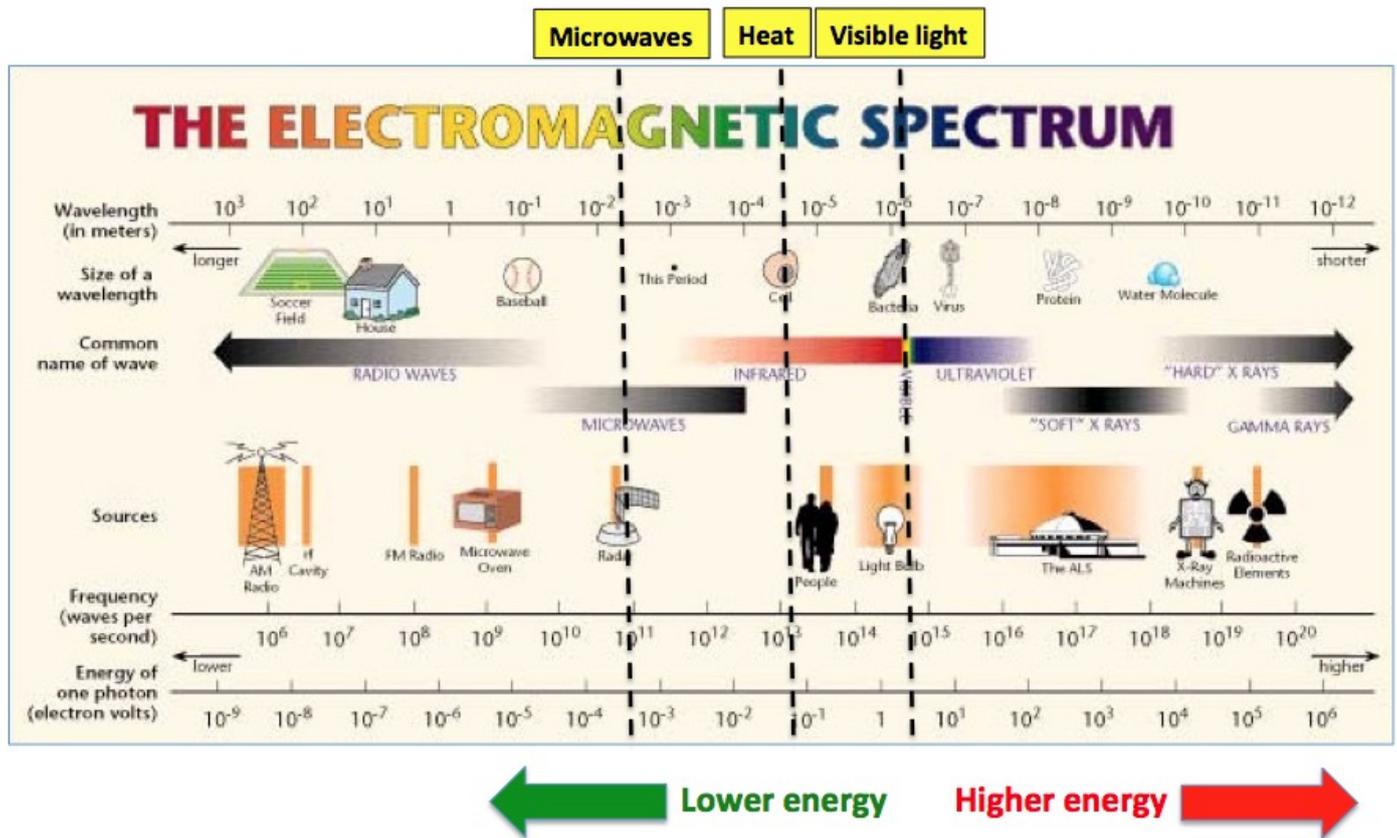


Figure 1: The Electromagnetic Spectrum - Adapted from <http://www2.lbl.gov/> [4]

The relationship between radiation and cancer is rather straight forward—DNA damage. But not all radiation is created equal. There are two broad types, ionizing and non-ionizing. The first is dangerous. The second is not. This is because it takes a good amount of energy to break chemical bonds in DNA. High-energy radio waves (higher frequency, shorter wavelength), such as x-rays, gamma rays, and UV are capable of penetrating cells and reacting with either water (2) or DNA itself. Either event can kill the cell, but sometimes the cell is not killed. Even though the DNA chain is broken, cells have repair mechanisms that undo the damage. But, these repair mechanisms are imperfect, and this leads to mutation, which is the first step in carcinogenesis.

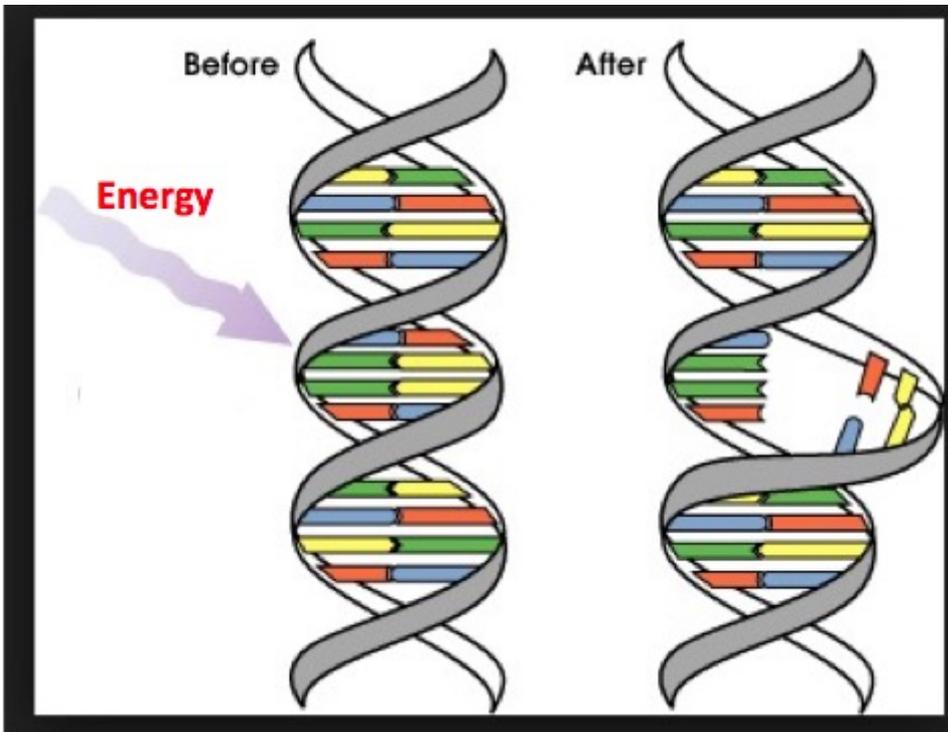
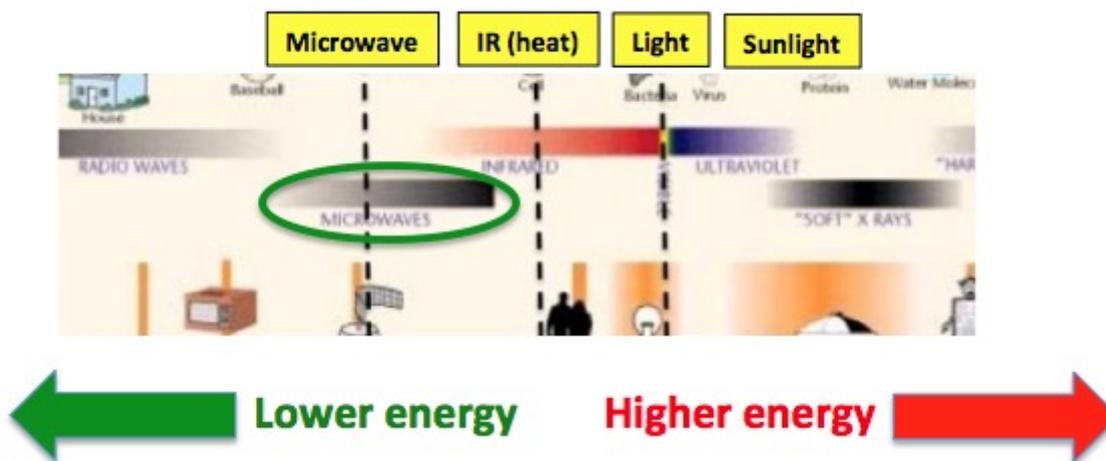


Figure 2: DNA damage from radio wave energy. (UV light or x-rays) Source: NASA

Knowing the mechanism of DNA damage, let's look at a section of Figure 1:



If you are worried about WiFi in your kid's school, you better find him or her a new one. It should have the shades drawn, no lights in the classroom, and no heat in the building because all of these sources of electromagnetic radiation are higher energy than microwaves.

No- microwaves are not going to cause DNA damage. It is impossible. If you don't believe me, then perhaps you'll want to listen to [Dr. Gary Larson](#) [6], a radiation oncologist:

"[R]adio waves [are] no different from those used to broadcast television programs, except that they are higher in frequency. They aren't nearly as high a frequency as visible light, and no one worries about getting cancer from visible light...There is no credible evidence that non-ionizing radiation has any adverse [health](#) [6] effects at

all. There is no radiobiologic mechanism that could explain such an association -- and absolutely no scientifically valid evidence that this has ever happened."

And (I LOVE this):

*"When we create artificial threats to our survival in our imagination, and then avoid practicing behaviors that make us vulnerable to those threats, we feel we have some power over whether we live or die. **These are also known as superstitions.**"*

Gary Larson, M.D., Medical Director - Procure Proton Therapy Center - Oklahoma City

Or, the [WHO](#) [7]:

"Non-ionizing radiation is the term given to radiation in the part of the electromagnetic spectrum where there is insufficient energy to cause ionization. It includes electric and magnetic fields, radio waves, microwaves, infrared, ultraviolet, and visible radiation."

Or the [National Cancer Institute](#) [8]:

"No mechanism by which ELF-EMFs or radiofrequency radiation could cause cancer has been identified. Unlike high-energy (ionizing) radiation, EMFs in the non-ionizing part of the electromagnetic spectrum cannot damage [DNA](#) [9] or cells directly...Studies of animals have not provided any indications that exposure to ELF-EMFs is associated with cancer."

Lights out.

Notes:

(1) The frequency of a wave is a measure of the number of waves that pass a given point in one second. This frequency is expressed in Hertz units.

(2) There are two modes by which ionizing radiation can damage DNA. One is indirect—the interaction of the radioactive particles with cellular water, which cause high energy free radical formation. Free radicals attack DNA and damage it by breaking chemical bonds. The other mode is direct radiation, where the alpha and beta particles (both positively charged) attack the DNA. Both ways cause mutation of the DNA, the first step in cancer formation.

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Links

[1] <http://www.satprnews.com/2017/02/27/first-state-in-the-nation-maryland-state-advisory-council-recommends-reducing-school-wifi/>

[2] <http://biorxiv.org/content/early/2016/05/26/055699>

[3] <https://www.healthychildren.org/English/safety-prevention/all-around/Pages/Cell-Phone-Radiation-Childrens-Health.aspx>

[4] <http://www2.lbl.gov/>

[5] <https://www.forbes.com/sites/quora/2016/05/19/a-radiation-oncologist-says-everything-you-need-to-hear-about-wifi-and-cancer-risk/#195318c87267>

[6] <http://www.forbes.com/health/>

[7] http://www.who.int/topics/radiation_non_ionizing/en/

[8] <http://Studies of animals have not provided any indications that exposure to ELF-EMFs is associated with cancer>

[9]

<https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045671&version=Patient&language>