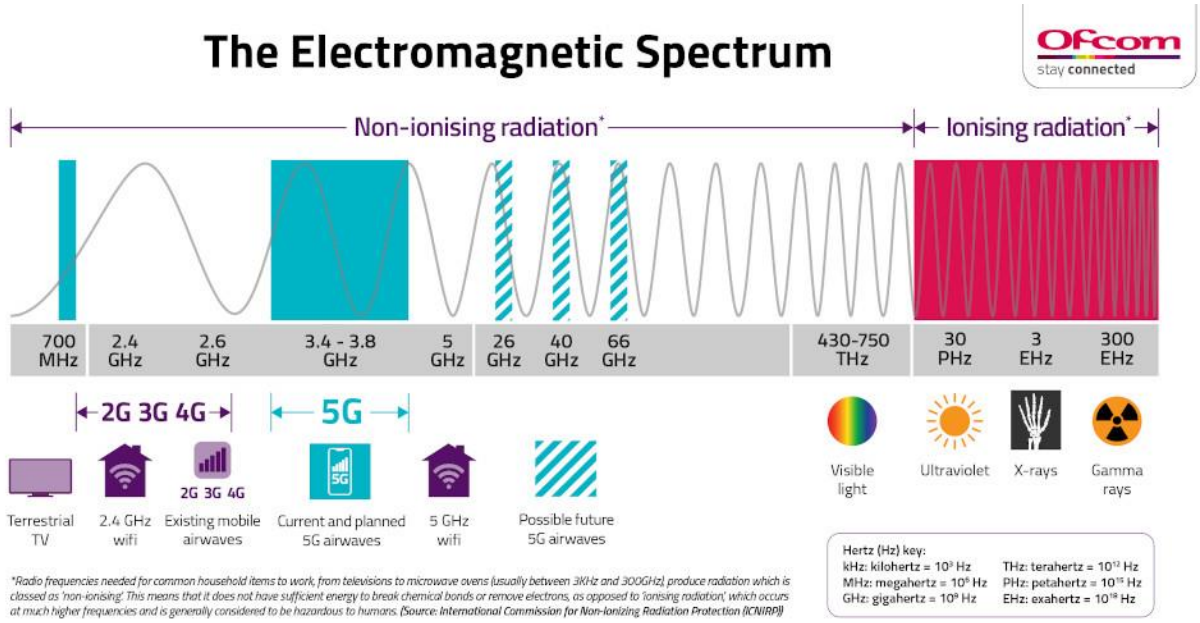
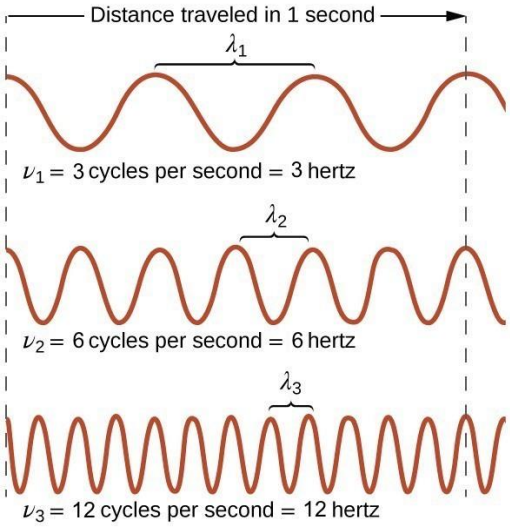
Big Telecom's Big Non-Ionizing Radiation Lie

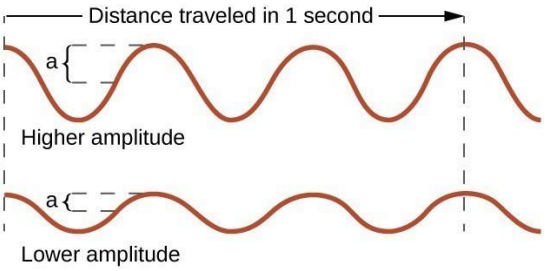
We hear it all the time. Microwave radiation is not a threat to our health because it is Non-Ionizing Radiation. So, it cannot affect your DNA. Crank up the Wi-fry. You will be just fine. Right? As more and more towers appear on our horizons, more people are questioning if that is really so. Are we told fairy tales by the industry and its regulators? Is the energy level of a microwave photon enough to ensure safety?



[i]

So let us outline the theories of the science. The simple two-dimensional representation shows the wave has frequency and amplitude[ii].





Electromagnetic waves are quantified as photons. The energy of a photon is the frequency ν multiplied by Planks Constant, h. The equation: $E = \nu h$. This is the basis for the classification of microwave radiation as non-ionizing. Microwave radiation is considered non-ionizing because

the energy level of the photon is not high enough to ionize by itself. As a second part of their safety claim, the industry has long claimed that the photons do not combine. This is the less spoken but more highly questionable part of their position.

Multi-photon technologies such as the pulsed laser[iii] challenge this premise and there are examples of microwave multi-photons being used to ionize Rydberg atoms such as Hydrogen.[iv] Not only do these examples show that photons combine, they show that when they do, the effects are more than linear and can be exponential. Far from being non-ionizing, microwave fields under the single photon ionizing frequency can energize bound electrons to near their activation energy so that they are ionized by single photons that would not otherwise ionize them. Those would include the photons of visible light.

Just what is a photon, anyway? The truth is, that Einstein left it as unfinished business and there is ongoing debate about it. We know it is energy, that has dual wave/particle properties, but no mass. Planks Constant is a fundamental physical constant of quantum mechanics that has been determined experimentally for electromagnetic radiation. The electromagnetic amplitude (3.86×10^{-13} m) is a constant from which Planck's constant derives. Speculation about its actual wave form includes the following:[v]

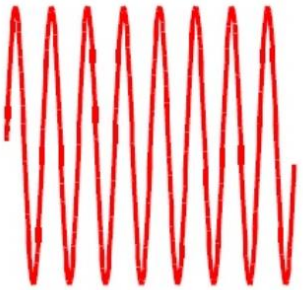


Fig.1

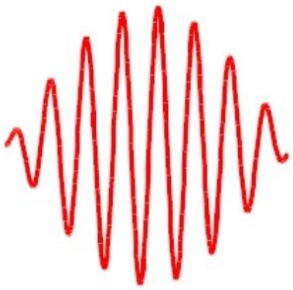


Fig.2

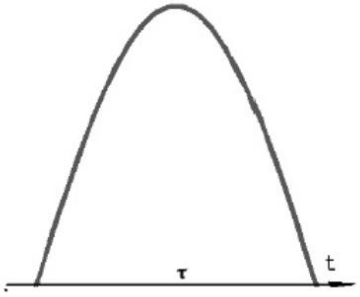
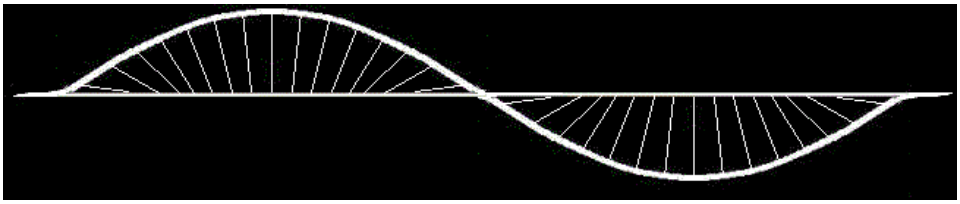


Fig.3

Images from How Long Is a Photon? by Igor Drozdov and Alfons Stahlhofen

There are contradictions in the theory and a lot of double-talk about wave/particle duality and equations that do not equate. The photon is commonly represented as in Figures 1 and 2 but may be more like Figure 3. Most people would think of the wavelength λ as one cycle, but they are represented as many cycles in Figure 1 and 2 so Figure 3 may more likely its actual form. The three-dimensional form would have curvature to the left or right first as photons are observed to have the characteristic of being left handed or right handed. It could be described as a singleton soliton electromagnetic wave. This view would be looking down from above the top of the wave shown in Figure 3.[vi]



It appears that microwaves are not continuous waves of oscillations, but a single oscillation. The Photon is a discrete bit (quantum) of energy that has a wave form. Their energy level varies with frequency and they all have the same amplitude. The frequency and wavelength determine the speed of the wave. The wavelength for a given frequency is typically related using the speed of light in a vacuum, $c = \lambda v$.

These relations are used to calculate the photon energies in the following table:

Table I. RF Wave/Energy Relationships

Frequency, GHz	Wavelenth, mm	Photon Energy, meV	N FCC	N DNA	
1.0	299.79	0.0041357	2,417,979	1,088,091	
10	29.979	0.041357	241,798	108,809	
100	2.9979	0.41357	24,180	10,881	
1,000	0.29979	4.1357	2,418	1,088	1 THz
10,000	0.029979	41.357	242	109	
100,000	0.0029979	413.57	24	11	
430,000	0.0006972	1,778	5.6	2.5	Visible Light
750,000	0.0003997	3,102	3.2	1.4	Visible Light
940,594	0.0003187	3,890	2.6	1.2	Ionize Caesium
1,000,000	0.0002998	4,136	2.4	1.1	1 PHz
1,088,091	0.0002755	4,500	2.2	1	Ionize DNA
2,417,979	0.0001240	10,000	1		FCC

The lowest ionization energy of any element is 3.89 eV (3,890 meV), for Caesium. The US Federal Communications Commission material defines ionizing radiation as that with a photon energy greater than 10 eV.[vii] Other studies show that energy levels of 4.5 eV are ionizing DNA.[viii] N FCC is the number of photons that would be required to get to levels of radiation that the FCC considers ionizing **if the photon effects are linear**. So the values for N FCC in the Table are based on 10eV (10,000 meV). Similarly, N DNA refers to 4.5eV,

The number of protons 1.0 – 10 GHz photons needed to do that appears quite high. But it is the power density of the field of a given frequency, that determines the concentration of photons and that can also be quite high.

What about the fields we are being exposed to? When we measure the voltage of a field of photons it is most commonly measured over a length and expressed as voltage per length. That is converted to power per area as that squared, with an assumption about what the permeability constant (k) is. $P = k E^2$. [ix]

What happens when DNA exposed to a field of 5 GHz at 0.1 W/m^2? This field would have an energy of 6.14V/m and a flux of 7.6 X 10^{21} photons per square meter per second. That is 7,600,000,000,000,000,000,000 photons streaming from the source through an area of a square meter every second. If your body height by width is a square meter, that would be near Avogadro's number of photons hitting you every minute as you stand in the field. It would require 544,046 photons to linearly ionize one electron from DNA. But once 31% of ionization

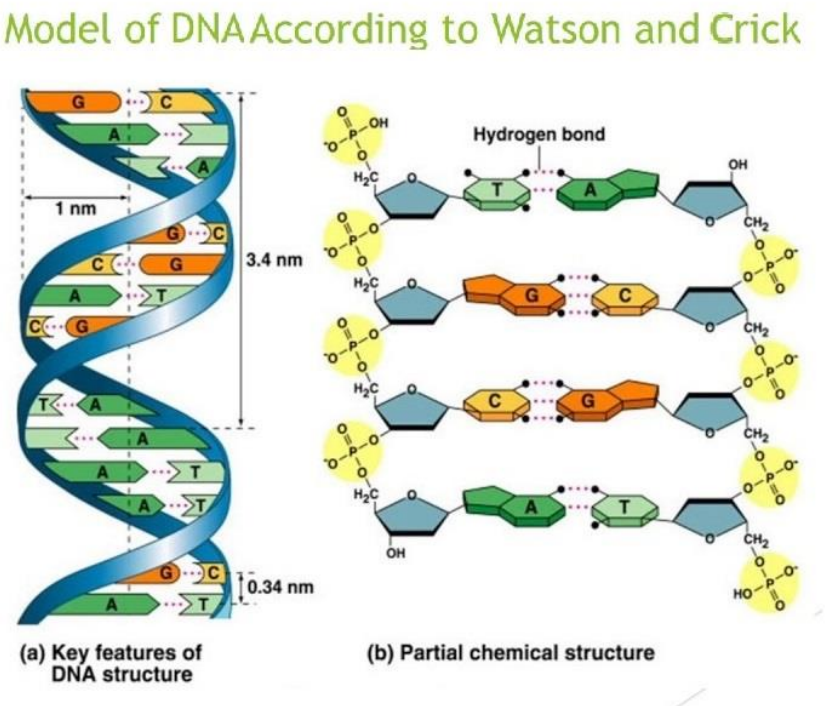
is reached, the energy of a single photon of visible light could reach the ionization energy level. Does this happen? Certainly, this looks possible. **Where are the studies on exposure levels and durations and the impact on our DNA and health?**

It is accepted that lower energy photons influence substances at the molecular level, including changing their electronic valence configurations, while still bound.[x] The absorption of a photon can make the electron more available for bonding.[xi] Two photon absorption is also reported.[xii]

Not so commonly accepted, is that the absorption of photons can continue after the electron reaches its highest valence state energy level still in its bonded state. Multi-photon absorption is observed and studied in Rydberg atoms such as Hydrogen. The photons can continue to be absorbed in a stable manner right up to the ionization limit. The ionization of Rydberg atoms with microwaves has been done and studied for years and it has been suggested that they are best described by quantum defect theory.[xiii] Rydberg atoms do not follow the rules of quantum physics ionization models.

The Chromium atom is considered a Rydberg atom.[xiv] Chromium (III) is an essential nutrient, needed for blood sugar and insulin level control and the oxide has the formula Cr_2O_3. Chromium (VI) is a carcinogen and the oxide has the formula CrO_2.We can only wonder at the many claims that microwave radiation is related to blood sugar control problems, diabetes and cancer and what role multi-photon absorption of microwaves may have in oxidizing essential Chromium (III) into carcinogenic Chromium (VI).

Rydberg molecules are considered rare and unstable. However, the atoms that make up molecules frequently retain some of their atomic characteristics and we wonder what properties Rydberg atoms bring to the molecules that include them. We should not ignore the fact that our DNA contains plenty of Hydrogen.



How would the ionization energy of DNA change if experiments to determine it were conducted with samples exposed to the levels and kinds of microwave fields and beams that we are expected to live in with 5G? And who knows just what other kinds of harmful photo-electro-chemical reactions are taking place? It is all denied by the Big Non-ionizing Radiation Lie.

For decades we have lived with cell towers that create high levels of radiation at the source, but they have been few and far between. Now we are exposed to these in a saturated and unavoidable manner with chronic exposure. Beams of it are fired through the air and we can never know when we could get hit. They may be installed outside our home at any time. Our properties may end up as a high power directional beam relay point and never know until we are sick.

Telecom propaganda frequently makes the comparison to light in the environment, that has frequencies a million times higher and has higher power density. They assure us that microwaves are less harmful. Yet if you look at the sun too long you will go blind. If you stay too long in the sun you will get burned. If you get sunburned while you are being microwaved, your sunburn will be worse. Counter to their claim, how much multi-photon ionization takes place? Does microwave radiation in the environment make sunlight more ionizing?

The 4G/5G Non-Ionizing Radiation safety story is a fairy tale. It is a total misconception of the world we live in where ionization takes place all the time. The addition of microwaves to the environment increases chemical reactions and ionization. The massive increase in radiation from 5G is a theft of life itself. Do you consent?

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[i] Ofcom Fails to Clear Up Myths Around 5G and the Coronavirus https://telecoms.com/503804/ofcom-fails-to-clear-up-the-myths-around-5g-and-the-coronavirus/

[ii] Electromagnetic Energy - General College Chemistry. https://courses.lumenlearning.com/suny-mcc-chemistryformajors-1/chapter/electromagnetic-energy-2/

[iii] Photoionization Multi-Photon , https://en.wikipedia.org/wiki/Photoelectrochemical_process#Multi-photon_ionization

[iv] Microwave Ionization, http://www.scholarpedia.org/article/Microwave_ionization_of_hydrogen_atoms

[vv] "How Long is a Photon?" https://arxiv.org/pdf/0803.2596.pdf

[vi] The Photon http://physicsdetective.com/the-photon/

[vii] Ionizing Radiation, https://en.wikipedia.org/wiki/Ionizing_radiation

[viii] Conduction-band-edge ionization thresholds of DNA components in aqueous solutions. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC20415/

[ix] Conversion of RF Units https://www.powerwatch.org.uk/science/unitconversion.asp

[x] Non-Ionizing Radiation https://en.wikipedia.org/wiki/Non-ionizing_radiation

[xi] Orbits and Energy Levels https://www.britannica.com/science/atom/Orbits-and-energy-levels

[xii] Two-photon Absorption. https://en.wikipedia.org/wiki/Two-photon_absorption

[xiii] Gurian, J.H.; Overstreet, K.R.; Maeda, H. and Gallagher, T.F. (2010). Connecting field ionization to photoionization via 17- and 36-GHz microwave fields *Phys. Rev. A* 82: 043415. doi:10.1103/physreva.82.043415.

[xiv] https://www.osti.gov/biblio/281451-rydberg-structure-cr-photoionization-process

[xv] Structure and Chemical Composition of DNA, https://youtu.be/2rEf1S-z234