

Frequently Asked Questions

Reprinted with permission, with extra italicized parts added by Kirstin Beatty. Arthur Firstenberg, director of the Cellphone Task Force, prepared this Q&A (posted on the site under newsletters) with a focus on cellphones, to invite support for a petition to halt cellphone use at EchoEarth.org.

What is wireless technology?

Wireless technology is any means of sending information or energy through space without wires. It includes:

- satellites, radar, radio, television, cell towers, cell phones, cordless phones,
- microwave ovens, *oceanic 'cell towers'*
- smart meters, WiFi, Bluetooth, fitness trackers, smart watches, baby monitors
- wireless keyboards, mice, printers, headphones and speakers, wireless security systems, wireless car keys, wireless garage door openers, wireless battery chargers, remote controls, wireless microphones
- RFID chips in credit cards and driver's licenses, radio collars and chips in wildlife, cattle and pets, chips in home appliances
- wireless hearing aids, assistive listening devices, medical alert pendants, chips in medical implants, wireless pacemakers
- autonomous vehicles, drones, and robots
- numerous other radio-enabled devices that are proliferating in today's world

Every one of these devices, without exception, emits radiation.

What's wrong with wireless technology?

By substituting radiation for wires, we are swimming in an ocean of artificial electromagnetic fields that interfere with life itself. We are in effect electrocuting ourselves, our children, our pets, the insects, birds, animals, trees and plants around us and all of living creation. We are killing our planet.

Where is the evidence of ecosystem harm?

Ecosystems are suffering from adverse impacts on soil, plant life, microbial life, and insects -- [trees](#), for example, struggle to germinate with strong exposures and show, with ambient exposure, physiological changes. Soil nitrogen levels can fall from exposures to [wireless](#) and from [electrical transmission cables](#).

A 2021 research review on wildlife impacts published in [Reviews on Environmental Health](#) by experts that counts former U.S. Fish and Wildlife senior biologist Albert Manville and

local Berkshire-Litchfield Environmental Council director Blake Levitt among authors, cites more than 1,200 scientific references which find at very low intensities adverse impacts on wildlife, such as birds struggling to build nests, mate, and reproduce (Levitt et al., 2021a, Levitt et al., 2021b, Levitt et al., 2021c). [Part 2, supplement 3](#), includes a table of biological effects available through a FCC docket.

[Survival of honeybees is now only possible through the intervention of beekeepers](#) who use queen bees that would normally be left to die by nature. As explained in a 2007 brochure [review by Dr. Warnke](#), wireless causes bees to disappear. Synergistic effects are possible. A 2021 study combining mobile radiation with pesticides saw [survival of only 25%](#) in one year and plummeting bee health,, while a 2018 study noted certain 5G frequencies could also cause [dielectric heating](#) of bees.

[Oceans](#) are a new frontier including sonar, optical, laser, and radiofrequency communications to support military, mining, research, and travel, with floating and underwater transmissions to support underwater vehicles, torpedoes, robots, etc. Sonar [noise](#) alone is known to impair hunting and orientation of life undersea.

This is about long-term exposure, right? Cancer that takes years to develop?

No. The effects are rapid. Heart rate changes immediately. Blood sugar rises in minutes. Having wireless devices on in your house interferes with your sleep and your memory. Using a cell phone destroys brain cells in minutes to hours, and can cause a stroke or a heart attack. Studies show that even cancer can develop within months of first exposure. When a cell tower is turned on, birds leave the area immediately. Insects disappear. Even slugs and snails vanish. Most of this takes no time at all.

Some scientific references to physiological changes can be found [here](#) from pages 6 to 38. PowerWatch.org.uk has an extensive library with documents summarizing research on wireless radiofrequencies and health risks: <https://www.powerwatch.org.uk/library/>

I don't know anyone with cancer. So why worry?

First, cancer is not the only problem caused by wireless.

However, cancer can develop slowly and exist in the body for years, unnoticed, for example as lymphomas that may contribute to exhaustion. Lymphomas are strongly associated with electromagnetic exposures.

Former director of the U.S. Environmental Toxicology Program, Dr. Chris Portier, prepared a 176-page report with 443 references for a tumor court case concluding: “to a reasonable degree of scientific certainty, the probability that RF [wireless] exposure causes gliomas and neuromas [tumors] is high.”

Avoiding wireless is wise because tumors can take 10 to 25 years or longer to manifest. However, aggressive cancers like glioblastomas, which are a type of glioma tumor, can also suddenly appear and end life a year, months, or weeks later. Gliomas are on the rise, as admitted in [Denmark](#), although countries appear to have trouble collecting accurate [data](#).

Notably, colorectal and thyroid cancers, areas near cellphones, are also surging. In 2019 the leading cause of death ages 5 to 14 was cancer, and in all ages cancer was the second leading cause of death, following heart disease.

Heart disease is also tied to exposures, such as through blood coagulation and hidden heart tumors. Heart tumors (schwannomas) were found in two important studies, one at the [Ramazzini Institute](#) using ambient radiation and the other using strong nonthermal exposures at the [U.S. Toxicological Program](#).

What types of radiation are used in wireless technology?

All frequencies of radio waves, microwaves, infrared radiation, visible light, lasers, sound waves, even nuclear radiation. Most home devices use microwaves.

Isn't microwave radiation natural? Don't microwaves come from the sun and stars?

Almost all the radiation we receive from the universe is the light and heat from the sun, not microwave radiation. The microwave radiation a person receives from an average cell tower is millions of times stronger than all the microwave radiation from the sun and stars. The microwave radiation a person's brain receives from their cell phone is **billions** of times stronger than the microwave radiation from the sun and stars. And at any particular frequency it is **trillions** of times stronger than the microwave radiation he or she receives from the sun and stars at that frequency. And the faint microwaves from the sun and stars are not pulsed and modulated. It is the pulsations and modulation that cause much of the harm.

Aren't light and microwaves both electromagnetic? Therefore isn't microwave radiation safe?

No. That is like saying arsenic is safe because oxygen and arsenic are both elements, or that cyanide is safe because water and cyanide are both chemicals. But oxygen and water are necessary for life, while arsenic and cyanide are deadly poisons. It is the same with electromagnetic radiation. Visible light is necessary for life. Microwave radiation is a deadly poison.

Aren't toxic chemicals more harmful than electromagnetic radiation?

Electromagnetism is more complex and more fundamental than chemistry. Electromagnetism shapes the sun and stars. Electromagnetism animates life. Electromagnetism is behind

chemistry. There is no “chemical force” in the universe. Outside of atomic nuclei, there is only gravity and electromagnetism.

Electromagnetism guides everything we see, including ourselves. Chemistry is an effect, not a cause.

Can't we find safe frequencies? Won't that solve the problem?

That is looking at both wireless technology and life too simplistically.

Most wireless technology has only one goal: to transmit information to computers, information of great complexity and variety. It is not simple, constant radiation of one amplitude and one frequency: such radiation would carry no information. Instead, it is multiple large frequency bands, each divided into hundreds, thousands, and millions of individual frequencies of all different bandwidths, overlapping and interacting, pulsed at an enormous variety of intervals, in an enormous variety of shapes, patterns and durations, all over the world. Even a single signal from a single device has a variety of amplitudes, frequencies and pulsations, and is modulated in complex ways in order to carry all the information needed to be read by a cell phone or computer.

Life has to also carry an enormous, almost infinite complexity of information in its nervous systems and its meridians, and to store and process this information in its cells, organs and chakras, and in its DNA which is shared and circulated among trillions of individuals of 50 million different species, all connected to one another and to the earth, sky and universe in a grand circuit of energy and information.

The artificial cloud of energy and information is interfering with, overpowering and destroying the natural, living circuitry of energy and information. It cannot be otherwise.

What about LiFi? If light is safe, why not use light instead of microwaves?

Light is a nutrient. We absorb it with our eyes, and into our blood. It is necessary for health. It regulates our biorhythms. Green plants need it for photosynthesis. We absorb more of the pulsations and modulation frequencies when they are carried into our bodies by light than when they are carried into our bodies by microwaves. LiFi is more harmful to life than WiFi.

Cell phones are much smaller than cell towers. Doesn't that mean they are safer? Doesn't it mean the radiation does not travel as far?

Cell phones and cell towers emit the same radiation; size has nothing to do with it. The main difference is that a cell tower emits as many signals simultaneously as there are cell phones communicating with it at that time, whereas a cell phone only emits one voice channel and one data channel. A cell tower therefore emits stronger radiation than a cell phone, but by the time it reaches your body, its radiation is much **weaker** than the radiation from a cell phone

that you hold in your hand, near your body. And a cell phone emits signals that a cell tower does not: Bluetooth, WiFi, GPS and other signals.

The radiation from a cell phone travels just as far as the radiation from a cell tower.

The radiation from a cell phone will reach all people, animals, birds, insects and plants in line of sight with it, no matter how far away. It will reach a cell tower 90 miles away. It will reach a satellite 22,300 miles away. It will reach Mars 200 million miles away. With 15 billion mobile devices on the Earth, we are polluting not just our homes, our neighborhoods and our planet, but the entire solar system.

My cell phone does not make me sick. Why should I stop using it?

Your cell phone is damaging your health whether you are aware of it or not. It is damaging your blood-brain barrier -- the barrier that keeps bacteria, viruses and toxic chemicals out of your brain tissue; the barrier that maintains the inside of your head at a constant pressure, preventing you from having a stroke. Since brain tissue has no pain receptors, plenty of damage can occur without pain. Instead, it will cause memory loss, difficulty concentrating, anxiety, depression, sleep disorders and so forth. In rats, damage to the blood-brain barrier can be detected after just a two-minute exposure to a cell phone. After a two-hour exposure the damage is permanent. There is no reason for it to be different in humans.

The radiation from your cell phone is also slowing your metabolism -- your ability to digest sugars, fats and proteins. This causes either obesity or weight loss, depending on your genetic makeup. It also causes diabetes, heart disease and cancer. Wireless technology is the cause of more obesity, diabetes, heart disease and cancer than any other factor.

The people who are aware of the damage in real time are the people who can feel it in their nervous system or their heart. That is maybe one-third of the population. It feels to them like they are being electrocuted. And they are, but so is everyone else. The few who have heard of such a thing call themselves "electrosensitive." Those who have not heard of it think they are suffering from anxiety, or that they have a neurological or cardiac disorder.

The first peer-reviewed paper proposing and documenting evidence that pulsed radiofrequency radiation likely was responsible for the so-called "Havana Syndrome" was published by Dr. Beatrice Golomb. She was invited to brief the state department-funded Standing Committee of the National Academies of Sciences, Engineering, and Medicine, whose report released in December 2020 agreed with her conclusion.

With a solid background in neurobiology, physics, and medicine as well as an impressive research career including work with RAND and the defense department, Dr. Beatrice Golomb is a credible authority who in 2014 [testified](#), based on scientific evidence, that society has a duty to reverse electromagnetic exposures to curtail suffering and prevent increasing cases of sensitivity.

Prove brain damage!

Many studies include wireless warnings like “may cause hazardous effects to the brain” (2015) and recommend limiting exposures.

‘Dr. Henry Lai, professor emeritus of bioengineering at the UWA, found that of 261 wireless peer-reviewed studies published from 2007-2020, 91% had found significant free radical effects – when an excess of free radicals contributes to **aging and disease** – and of 336 wireless peer-reviewed studies 73% had found **significant neurological effects**.

Dr. Lai has transparently published the abstracts of those studies online at the Bioinitiative.org. . . .

. . . Findings in Dr. Lai’s abstracts are difficult to dispute, since many are animal or cell studies showing significant structural or chemical changes that have serious consequences. Findings of astrogliosis, potential gliosis, reduced neurotransmitters, and rising GFAP levels in four studies are, for example, associated with **central nervous system damage** and diseases such as **Parkinson’s, Alzheimer’s, multiple sclerosis, amyotrophic lateral sclerosis, mood disorders, and stroke**, all of which have been trending, with **earlier onset**, sharply upward long before COVID-19.’ Quote from [Hampshire Gazette](#) column.

In 2014, a diagnosis of a 29-year-old father with Alzheimer’s coupled with rage and confusion mirrored trends of a 373% increase in ages 30-44 just from 2013 to 2017. This is far from normal in prior decades.

Skyrocketing learning disabilities and behavioral disorder rates among youth are so great the evidence is before all of our eyes. This is far from normal before the intense adoption of cellphones and WiFi circa late 1990s and 2005.

WifiinSchools.org.uk lists studies showing ‘cognition inhibition’ and damage to health.

The WHO Russian National Committee for Radiation Protection in **2008** released a strong statement including these words: ‘For the first time in history, we face a situation when most children and teenagers in the world are continually exposed [to mobile phones] . . . Potential risk for the children’s health is very high . . . **health hazards** are likely . . . in the **nearest future**: disruption of memory, decline of attention , diminishing learning and cognitive abilities, increased irritability, sleep problems, increase in sensitivity to stress, increased epileptic readiness.

Expected (possible) remote health risks: brain tumors, tumors of acoustical and vestibular nerves (in the age of 25-30 years), Alzheimer’s disease, “got dementia”, depressive syndrome, and the other types of degeneration of the nervous structures of the brain (in the age of 50 to 60).’

- <https://www.who.int/peh-emf/project/mapnatreps/RUSSIA%20report%202008.pdf>

Isn't a flip phone safer than a smartphone?

Both are digital and both emit pulsed, modulated microwave radiation. And despite what many people think, flip phones can emit as much radiation, or more, than smartphones. But safety is not determined by power level. Damage to the blood-brain barrier is greatest at the lowest power level, at least in laboratory rats. The bandwidth is more important than power level. Smartphones use more bandwidth than flip phones.

The bottom line is that cell phones have been killing people since they were invented. In each city in the United States where 2G “flip phone” service was turned on for the first time in 1996 or 1997, mortality rose immediately, on the day it was turned on in each city. And the overall health of the population was damaged permanently. At least ten thousand Americans died from the radiation within three months after 2G “flip phone” service was turned on in various cities in 1996 and 1997. Whether more people died from their new phones or from the new cell towers is impossible to know: the radiation comes from both.

Isn't a cell phone safe to use as long as you hold it away from your head?

About 20 years ago someone started promoting the idea of the “near field plume” which was supposed to extend out six inches from a cell phone, and that if you held your phone more than six inches from your head, you were safe. That is a complete fiction. There is no such thing as a near field “plume.” It does not exist.

The region very near to a source of radiation, where the electric field and the magnetic field are separate and complex, is called the near field. The space very far from the source, where the electric and magnetic fields are tied together and diminish with distance, is called the far field. The near and far fields blend into one another. There is no dividing line where one stops and the other begins. And it is certainly not true that the radiation stops at six inches. If that were true, the radiation would never reach a cell tower and the phone would not work. And if it were true of a cell phone, it would also be true of a cell tower, which emits the same radiation. Then a cell tower would be safe if you stood more than six inches away from one. How absurd!

And your body is a conductor, so if you are holding the phone in your hand, no matter how far away from your head, the microwaves are conducted into your hand and throughout your body, and your arm is an extension of the phone and is part of the radiating antenna.

If you put the phone on a table in front of you and do not hold it, then the microwaves are just irradiating you and not being conducted into you. But since for some types of harm, for example damage to the blood-brain barrier, the damage **increases with distance**, that does not protect you either.

If the radiation levels from cell phones and cell towers were reduced, wouldn't that make them safe?

No. It is the informational content, not power level, that causes the harm. A cell phone exposes the brain to microwave radiation at roughly 10 milliwatts per square centimeter. At power levels one **trillion** times lower than that, microwave radiation has been shown to affect ovulation, the immune system, plant growth, human brain waves, and the structure of DNA.

Don't we need more studies before we know if microwaves are dangerous?

No. We already had 10,000 studies by 1980. Today we have at least 30,000 studies. There are more studies showing harm from microwaves and radio frequency radiation than from any other pollutants except tobacco smoke and mercury.

How long has this been going on? How long have we known that wireless technology is harmful?

For as long as wireless technology has been around. At Marconi's first public demonstration of radio in Salisbury Plain in 1896, spectators described various nerve sensations they experienced. When Marconi turned on the first French radio station in Wimereux, one man who lived nearby "burst in with a revolver" because the waves were causing him sharp internal pains. On the evening of January 22, 1901, when Marconi fired up a new, more powerful transmitter on the Isle of Wight, Queen Victoria, in residence on the island, had a stroke and died. Within a few years, 90 percent of the bees on the island had disappeared. Marconi himself suffered from recurring fevers from the time he began experimenting with radio and for the rest of his life. He suffered nine heart attacks, the last one killing him at age 63. Even prior to Marconi, in the early 1890s, Jacques-Arsène d'Arsonval published the results of experiments on humans and animals showing that high frequencies affect blood pressure and profoundly alter metabolism.

Note: Firstenberg has written [The Invisible Rainbow: A History of Electricity and Life](#), which includes citations for many historical anecdotes.

Don't we need smart, wireless utilities & devices to save energy?

No. Smart or wireless devices hog energy and resources.

State and federal grants conceal the costs of the smart grid with taxpayer money. IT and utility interests lobby for these grants at your expense, often marketing smart utilities as 'green'. Smart meters allow utilities to change pricing based on any condition, and have been tied to high time-of-use billing harmful to the poor and [exorbitant prices](#) or false energy readings. Smart meters also allow utilities to pay less for alternative energy through

digital calculations. Massachusetts utility shareholder profits have been rising since the advent of smart meters.

National Grid's 2021 proposed plans include a private communications network, which few municipalities can afford. Nationally, meter installations alone can range from \$300 to over a \$1000. Over a 20-year period, National Grid **projects** customer bills will be **1.63% of current prices**. This expected **increase does not include all costs**, for National Grid expects 727.92 million in savings, resulting in total costs of only 480.67 million for its 1.3 million customers. Cross your fingers.

Wireless is much more energy intensive than wired connections, may even be 69 times more energy intensive, so it is the opposite of green.

The smart grid also increases energy and resource consumption with numerous wireless transmitters, from 'smart' meters, to relays, cell towers, field devices, computers, and by supporting connections to home devices from thermometers to coffee machines (IOT).

Utilities may say smart meters allow the energy use to be reduced remotely, but completely ignore that the infrastructure continually uses more energy to remotely track data and control energy use.

Utilities may say smart meters save energy by allowing consumers to track energy use, but studies show people never act on this data.

Marketing smart cities and utilities as green is just that: marketing. Utilities omit that smart meters can cause many issues, like household wiring problems and fires. Your data can be sold for a profit – but this has little to do with saving the planet.

An economics professor and former energy advisor, after reviewing a British smart meter plan, has called the project 'astonishingly expensive' and said civil servants 'cooked the books' to conceal a €4 billion dollar expense with imagined and inadequate energy savings.

Do company officials know their products are harmful? Are they doing this to us deliberately?

They all use cell phones like the rest of the world and are as much in denial about them as everyone else. The denial, which runs deep in society, goes back to the beginning of the development of electricity in the 1700s.

What about electricity?

Today, modern electricity is contaminated with extra frequencies that run along the wires and emit. These result when we plug devices into the grid that do not use the same type of frequency as the electrical wiring. Alternative energy, digital devices, and energy-saving

devices all add different frequencies to the lines. This contamination is called poor power quality and can introduce radio static and shorten the life of electrical devices.

Poor power quality can be eliminated with proper design, such as use of quality filters, but regulations must force the issue.

An easy-to-understand book about this topic is titled [Dirty Electricity](#), by Dr. Samuel Milham. In the 1990's the Swedish Union of Clerical and Technical Employees in Industry (SiF) also studied electromagnetic and chemical sensitivity, publishing many easy-to-understand reports for 'No Risk' that are saved online at EMFacts.com/NoRisk.

I keep my phone off except in emergencies. Doesn't that protect me and others?

A cell phone leaks radiation from all of its resonant circuitry, even if it is turned off, as long as the battery is in it. So does a modem or router that has WiFi, as long as it is plugged in. I have measured radiation coming out of modems in which the WiFi was disabled. I can always tell when someone is carrying a cell phone because I can feel the radiation, even if it is turned off and hidden in their pocket, even from across a room. I have never been wrong.

For whatever reason you have a cell phone -- any kind of cell phone -- all of the world's cell towers have to be there in order for it to work when you want it to. No matter how rarely you use the phone, all the cell towers have to be there. If you use it "only in emergencies," that is even worse, because you are likely to be using it in remote places where there are no cell towers and service is not good. Every call you make from a location where there are no towers is recorded as a request for service, and your provider will eventually put up a cell tower there in response to those calls.

When I am at home I use my cell phone connected by an ethernet cord to a modem. Doesn't that protect me?

It does not protect you because it is still emitting radiation. It does not protect others because when you are not at home you need all the cell towers to be there and you are irradiating everyone around you simply by carrying the phone around.

There are no landlines available where I live. I need my cell phone.

Unless people get rid of their cell phones, there will soon be no landlines left anywhere. The existence of landlines depends on demand. The existence of cell phones depends on demand. No one is doing this to us. We are doing it to ourselves.

Is fiber the solution?

Fiber enables 5G. 5G antennas are connected to each other and to the Internet by fiber optic cables. Wireless companies are spending hundreds of billions of dollars laying fiber all over the world for 5G. When a fiber company or a city lays fiber optic cables, wireless companies pay for the right to use it. After the fiber is laid, they stick antennas into it and broadcast 5G.

How is 5G different from 4G?

5G can use much higher frequencies (millimeter waves). But the biggest difference is that 5G towers and 5G mobile devices aim narrowly focused beams at each other instead of sending the radiation in all directions. If you are holding a 5G phone in your hand, the nearest 5G tower is tracking you and aiming a beam of radiation directly at your body. This is called phased array technology and it results in greater penetration of the radiation into your body, even at millimeter wave frequencies, than previous wireless technologies. 5G towers also send radiation in all directions because they are constantly scanning the environment looking for devices to connect with.

Is 5G a weapon?

No. 5G can use millimeter waves. There are also crowd-control weapons that use millimeter waves. But the weapons are a thousand times more powerful and they are not modulated and carry no information. They are different technologies that were developed by different people for different purposes.

Are there devices that can protect us from these frequencies?

There are many companies today that prey on the gullibility of people who are desperate to protect themselves from an assault that is coming from everywhere. They sell “protective” chips to put on your cell phone or computer, pendants and bracelets that will “neutralize” or “harmonize” the radiation, devices to plug into your wall that will “protect” an area hundreds or thousands of square feet around your house. Some advertise that they are “quantum” devices, or are based on “scalar” technology or “torsion” fields, which are sexy words that sound scientific but mean nothing. You cannot “neutralize” or “harmonize” radiation. These devices, without exception, are ineffective and most will harm you.

Many of these devices emit a 7.83 Hz signal which is supposed to duplicate the first Schumann resonance of the Earth. These are point sources that cannot duplicate a natural frequency that bathes us from all sides. They make some people feel good for a couple of weeks, and they can be addictive, just like the frequencies from a cell phone or computer can be addictive, but they will harm you.

What are the alternatives?

The alternative is wires. Wired phones. Wired computers. There is no need to reinvent the wheel, wires are what we had before wireless and are superior in every way. Wires carry the same voices, but clearer. The same information, but more securely. And the information is contained in the wires, instead of being broadcast all over the earth in a cloud of radiation. Wireless is convenient, but for the sake of convenience we are killing ourselves in real time and destroying our planet. *Setting and enforcing power quality regulations for electricity and manufacturing is necessary, too, for safer wiring.*