

MICROWAVES, 2011

Summary of a Problem

The routine irradiation of human beings at close range, continuously from cradle to grave, began with the sale of the first personal computers in 1977. A disease known as “screen dermatitis, previously confined to newspaper employees and other early computer users, broke out among the general population in that year. Asthma rates, which had been falling for decades, began to rise in that year. A few years later the rate of strokes in young people began to noticeably increase.

The milestones of irradiation since then are illustrated by the following chart. Dates are for the U.S., and are approximate.

1977	personal computers							
1992	personal computers	+ broadband						
1996	personal computers	+ broadband	+ digital cell phones & towers					
1998	personal computers	+ broadband	+ digital cell phones & towers	+ low orbit satellites				
2001	personal computers	+ broadband	+ digital cell phones & towers	+ low orbit satellites	+ WiFi			
2007	personal computers	+ broadband	+ digital cell phones & towers	+ low orbit satellites	+ WiFi	+ Smart-phones		
2010	personal computers	+ broadband	+ digital cell phones & towers	+ low orbit satellites	+ WiFi	+ Smart-phones		
		+ “4G” phones	+ Distributed Antenna Systems	+ “4G” satelllites	+ Smart Meters	+ MiFi		
		+ WiMAX						

This article summarizes what is coming, what is here, and what we have been living with for so long that many have forgotten how very harmful it is.

SATELLITES

Today. . .

On November 15, 2010, from a spaceport in Kazakhstan, a company named Lightsquared launched 4G communications into outer space. Aboard the largest, most powerful commercial communication satellite ever put into orbit are a 72-foot reflector, 500 separate spot beams that can be focused on any region of North America, and 11,900 watts of actual power. This satellite

is part of the company's plan to blanket the United States and Canada with ubiquitous 4G wireless broadband service.

In addition to 40,000 new cell towers that the company plans to build over the next four years, the satellite will ensure that even areas not reached by one of these towers will still have coverage. "Never again," writes the company, "will people have to worry about traveling out of the network or losing their connection. For the first time ever, people can enjoy universal network coverage, no matter where they are in the United States."

Similar ventures have recently been launched in other parts of the world. "HYLAS 1 SATELLITE BLASTING OFF TODAY, WILL RAIN DOWN BROADBAND FROM ABOVE," read a headline from the BBC. Owned by Avanti Communications, this satellite will offer high speed broadband connections and high definition TV to 300,000 households in Europe. Avanti has plans for more satellites that will serve Africa and Asia.

The following month, on December 26, 2010, Eutelsat Communications launched Ka-Sat. Its 82 spot beams will offer high speed connections to 2,000,000 households in an area ranging from North Africa to southern Scandinavia to parts of the Middle East.

. . . and yesterday

Common wisdom has it that because satellites are so far away they can't do us any harm—that satellites, in fact, are the way to have safe wireless technology.

That this is not so was long suspected. By the 1970s scientists knew that radiation broadcast by towers on the ground can be trapped by magnetic field lines high above the earth and then amplified thousands of times. What would happen, they wondered, if radiation originating from satellites orbiting right *in* the radiation belts above the earth were similarly amplified? How might that affect life below?

As far as we know, the Cellular Phone Task Force is the only organization that has actually been monitoring the effects of satellites on health.

The first satellite phones went into operation on September 23, 1998 when Motorola's 66 low-orbit "Iridium" satellites began planet-wide service. One week later I surveyed 57 electrically sensitive people in the U.S., Canada, Ireland, Australia, Japan, and Sweden. 86% of us had fallen suddenly ill on that exact date, with typical symptoms of electrical illness such as headaches, dizziness, nausea, insomnia, nosebleeds, heart palpitations, asthma attacks, and ringing in the ears. Some of us were so sick we weren't sure we were going to survive. A look at mortality statistics published by the Centers for Disease Control revealed that a 4% to 5% rise in the national death rate occurred during the two weeks following the beginning of satellite phone service. During those same two weeks, thousands of homing pigeons got lost in races throughout much of the eastern two-thirds of the United States.

In early December 1998 we again received telephone calls from people far and wide suddenly ill, asking again what had changed in the world. I did some checking. Orbcomm, the second of the low earth orbit (LEO) satellite fleets, had gone commercial on November 30. Its 28 satellites, orbiting 500 miles up, had begun providing wireless data service everywhere on earth.

Then, in late July 1999, and for several weeks thereafter, we again received inquiries from people who were certain the earth felt different again. A third company, Globalstar, had achieved global coverage on July 25 with 32 satellites and its system was undergoing full testing.

By March 2000, we reported that the number of low orbit satellites providing digital wireless services to penguins was up to 155. Radio astronomers were screaming that their telescopes were being blinded and they could not see the stars. “It is vital that we take action!” said Dr. Woodruff T. Sullivan III, one of the organizers of a radio astronomy symposium held in Vienna in July 1999.

In 2001 a team of Ukrainian scientists warned that communication satellites were dangerous, especially those equipped with spot beams that can provide great amplification. This review of Russian and Ukrainian research by N.K. Kositsky et al. was published by the Cellular Phone Task Force. They wrote:

Observed higher resonance frequencies of a living cell coincide with frequencies of radiation of communications satellites. The power densities and duration of irradiation created by these satellites will significantly exceed (by ten or more orders of magnitude—such irradiation is possible over the course of a whole lifetime)—the energetic doses inducing changes in living cells.

They warned that we radiation from satellites may cause “changes in cell structures and physiological processes, genetic changes, and alteration of psychophysiological conditions and behavior.”

But radio pollution of earth and space continued to worsen. Globalstar launched full commercial service on Monday, February 28, 2000. After a year and a half in bankruptcy, Iridium resumed full commercial service on March 30, 2001. Several weeks later a catastrophic wave of spontaneous abortions spread among race horses in at least eight states and several countries. On June 5, 2001, Iridium, which had previously provided only voice transmission, added data services and connections to the Internet. Each of these events was accompanied by worldwide illness, consisting of nausea, flu-like symptoms, and feelings of oppression, lasting for about three weeks.

After 2001, satellite phones did not changed much for eight years. The early players—Iridium and Globalstar—went bankrupt, but have continued raining down microwaves year after year, courtesy of government subsidies and military contracts to supply satellite phones to soldiers. At present, companies desiring to place a Smart Phone in the hands of every man, woman and child on earth are enlisting the aid of a new and more powerful generation of satellites.

CELL PHONES... CELL TOWERS

Today. . .

The iPhone-4 went on sale April 20, 2010, the Droid X on July 15, 2010. These are the gadgets that are creating the need for new satellites and hundreds of thousands of new cell

towers. It's called 4G wireless, and its speed and capabilities are mesmerizing the world. With "ordinary" cell phones one can only talk and text, and not at the same time; 4G phones can handle any combination of voice, internet access, music, video games, TV reception and video streaming simultaneously. And they can do everything about 3,000 times as fast.

Most people don't think about the consequences of owning these "Smart Phones"—namely, that they use up hundreds of times more bandwidth on cell towers. And because most people leave their Smart Phones on all the time, they use up bandwidth even when no one is using the phone. This means that existing networks of cell towers that provide complete coverage for ordinary cell phones are totally inadequate for Smart Phones. Where a company used to need five towers to serve its customers, it now needs a hundred, and it needs to build them as fast as possible because people are buying up the new devices as fast as companies can sell them.

They are also causing more illness than older phones used to cause. In fact, Smart Phones are proving so much worse for health and environment that many people have forgotten how lethal even "ordinary" cell phones are.

. . . and yesterday

In the late 1990s, after cell phones had been in general use for several years, teams of scientists in many countries began to investigate what happens to nearby residents when cell towers are erected in their neighborhoods. The answers were disturbing. In France, Santini et al. reported that the health of over half the exposed population was negatively affected. Unexpectedly the radiation seemed to hit young adults in their twenties and thirties the hardest. Among this age group, 53% of those who lived within 300 meters of a cell tower had disturbed sleep, compared with only 12.5% of those who did not live near a cell tower; 82.4% had fatigue, compared with 25% of those with no tower nearby; 57.6% had headaches, compared with 18.2% of those with no tower nearby.

Surveys with equally alarming results have been conducted in Poland, Austria, Spain, Germany and Cyprus. Dutch researchers found the same set of symptoms in volunteers exposed under laboratory conditions. In Egypt, after the first cell tower in Menoufiya governorate was built, researchers surveyed residents who lived nearby: 28.2% were suffering from memory loss, 23.5% from sleep disturbance, 23.5% from headaches, 21.7% from depression, 18.8% from dizziness, 9.4% from tremors. The numbers from elsewhere in Menoufiya were 5%, 10%, 10%, 8.8%, 5%, and 0% respectively.

The studies referred to above looked at everybody who lived in the vicinity of cell towers. The finding of the same pattern of illness in up to three-quarters of cell phone *users*, in study after study throughout the world—Sweden, Norway, Egypt, Poland, France, Saudi Arabia, China, Singapore, Turkey—exposed an open secret: everyone is harmed, not just a select few. "Ordinary" cell phones turn out to be one of the most significant burdens on public health in the world today.

In both Europe and North America, the downturn in public health happened quite suddenly during 1996 and 1997. In Sweden, antenna towers for 1800 MHz cell phones were built during the latter part of 1997 throughout the country in the space of a few months. Olle Johansson and Örjan Hallberg analyzed health statistics. They found that the number of Swedish workers on sick leave, which had been declining for a decade, suddenly began to rise in August 1997 and more than doubled during the next five years. During the same period of time, sales of antidepressants doubled. The number of traffic accidents, which had been declining for years, also began to rise. The number of deaths from neurological disease began to rise, and two years later deaths from Alzheimer's disease, which takes time to develop, reversed a declining trend, doubling during the next three years.

In the United States, I analyzed weekly mortality data for 122 U.S. cities, obtained from the Centers for Disease Control. In each of 19 of the largest cities, a 10-25 percent increase in mortality occurred, lasting two to three months—as though a disease epidemic had swept through—beginning in the exact week of 1996 or 1997 in which that city's first digital cell phone network began commercial service.

It was in response to that emergency that the Cellular Phone Task Force was founded.

DISTRIBUTED ANTENNA SYSTEMS

As indicated above, the use of Smart Phones is causing all the cell phones companies to run out of tower capacity. Where previously a company needed one tower for every thousand cell phone customers, it now needs a tower for every hundred Smart Phone customers. This is creating problems for both telecom companies and zoning boards, because existing zoning laws simply cannot accommodate the need. City staff doesn't have the manpower to process a hundred applications at once, and zoning boards that meet once a month don't have the scheduling time to hold a hundred separate hearings in a year. Yet the citizenry are complaining that their Smart Phones are dropping calls, and there are dead zones.

To address this problem, entrepreneurs have invented a new marketing strategy. They link hundreds of cell towers together with fiber optic cable and sell them to a city as a single project, after first convincing the city—often by threatening legal action—to revise its telecommunications ordinance. The new ordinances, which are being adopted all over the country, allow zoning boards to approve hundreds of towers en masse by a single vote after a single public hearing. The operative word is “franchise.” Cities are allowing these companies to purchase a telecommunications “franchise,” after which they are permitted to install unlimited numbers of towers in the public rights of way with no further applications, hearings, or notice to the public. Residents are waking up to find that their entire village, town or city has suddenly been plastered with antennas, affixed to the top of existing utility poles standing in the streets in front of their houses, as well as on private easements in residents' front, side, and back yards. The ugly secret is that the antennas on these forests of short poles—which are being sold to uninformed zoning boards as “low power”—are not much less powerful than antennas used to be when they were spaced far apart on tall towers.

These entrepreneurs have named their new product “distributed antenna systems.” The companies, called NextG Networks, NewPath Networks, and Extenet Systems, are really stand-ins that take the heat for telecom providers that don’t want to face the public opposition. And the public has been strongly opposed. Everyone wants their Smart Phones, but no one wants the towers necessary to make them work. So these companies have come into New Orleans, Philadelphia, Los Angeles, Atlanta and other cities, lied to the public, held single public hearings, commandeered hundreds of utility poles, leased the new antennas back to AT&T, Verizon, T-Mobile and Sprint, and then departed, leaving sickness and bewilderment in their wake.

WIFI... MIFI

WiFi, invented in 2001, rapidly became so popular that within a very few years it became difficult to find any hotels or cafes anywhere in the country that had not installed it for the use of their customers. It soon was even difficult to find hospitals that had not installed it for the use of their patients.

WiFi typically blankets an area extending for 100 yards in every direction with a cloud of microwave radiation that anyone can tap into with their laptop computer. Just a few years ago, WiFi was an optional addition to one’s computer setup for which one had to pay extra. Today it is standard equipment, and it is no longer possible to buy a computer modem that does not have a WiFi antenna already installed and operating. Those who do not want the radiation in their homes or businesses may have to spend considerable time and effort finding out how to turn off the WiFi in their modem. The result is that almost everyone who owns a computer has WiFi whether they know it or not, and anyone who lives in a residential neighborhood is commonly bombarded with a dozen or more WiFi signals from neighbors who may not even be using them.

As if avoiding fixed WiFi hotspots wasn’t enough, in June 2009 Novatel Wireless introduced a *mobile* WiFi device, called “MiFi.” This personal device, which anyone can carry in their pocket, communicates directly with cell towers just like cell phones, turning the incoming waves from the tower into a wireless internet signal with a useful range of 30 feet.

In 2010, the Droid X became the first Smart Phone with a built-in WiFi hotspot. On January 11, 2011, Verizon announced that its new iPhone would also have this capability, and soon Apple announced that all of its iPhones would soon have this feature as well. The forecast is that by the end of 2011 all Smart Phones will be walking WiFi antennas as well as cell phones, and that there will be no way to avoid exposure to WiFi except by avoiding human society.

WiMAX

For those wishing, or needing, to avoid exposure to microwave radiation, at least WiFi is mostly confined to the immediate vicinity of the homes or businesses that have installed it. Companies wishing to blanket entire cities with WiFi have previously found it difficult and expensive to do so. Being an unlicensed technology, it is subject to FCC rules strictly limiting the power level of each antenna. Until recently, this meant that even outdoor WiFi “hotspots”

had a range of at most a few hundred yards, and that laying a cloud of WiFi over a whole city required antennas in hundreds of locations.

However, in late 2009 the FCC auctioned off spectrum in the 2.5 Ghz band for a new licensed service that does not have to comply with these limits. Antennas on a single tower now have a maximum range not of hundreds of yards, but of over 30 miles. This new technology is called, appropriately, WiMAX. With such an FCC license, a company called Clearwire Communications plans to establish service nationwide, laying a cloud of WiFi over not just individual cities, but over the whole United States. Further, in 2011 Clearwire intends to begin selling its own “4G” Smart Phone that will transmit voice, data, movies and live video over its same WiMAX network. On February 17, 2011 Clearwire announced that it had already built 14,500 “4G” towers, which reached approximately 119 million people in the U.S.

SMART METERS

The year 2010 also saw a general invasion of “Smart Meters” onto private properties across the nation—not only in those areas where utility companies had been slowly automating their meter reading for a few years, but as part of a stepped up nationwide plan for energy efficiency that is being coordinated from Washington. Consumers are not being allowed to opt out.

Automated reading of water, gas and electric meters has been coming gradually into use over the last several years. Utility employees no longer have to come to the customer’s house once a month to manually read the new meters. Instead, they now drive quickly through the neighborhood to read all the meters at once with a remote device that they carry in their truck. Even though this is done only once a month, each meter on a customer’s house is programmed to emit a microwave signal continuously, typically once every fifteen seconds, broadcasting consumption data day and night that can be read from at least a quarter of a mile away.

The “Smart Grid,” mandated by the Energy Independence and Security Act of 2007, is now intensifying this system. The idea is that if electricity usage in every household and business is continuously monitored and transmitted in digital form to central computers, energy efficiency will be promoted. Power will be automatically distributed where and when it is needed. Electricity use will be billed at different rates based on time of day and season, encouraging consumers to reduce their energy use during times of peak demand.

Multiple layers of wireless technology are necessary for this to work. Antennas are added to utility meters to transmit information about overall energy usage. Additional antennas are installed on consumers’ washing machines, clothes dryers and air conditioners, turning them into “smart appliances” that communicate directly with the power company’s computer, which can turn appliances on during times of low usage, and off during times of excess demand. Hundreds of more powerful antennas are placed on utility poles that are distributed throughout the city. Similar to a Distributed Antenna System, this network is necessary to relay all the information between customers’ premises and the power plant.

Because “Smart” electric meters are directly connected to the wiring in customers’ homes, the radio frequency energy they emit not only travels through the air, but is conducted into the wiring and surrounds customers in their homes. Reports of sleep disturbance, headaches, dizziness, nausea, fatigue, shortness of breath, heart palpitations, ringing in the ears, memory loss and difficulty concentrating are widespread.

NO MORE LIGHTBULBS

Ordinary incandescent bulbs will soon be banned from sale. Like the “Smart Grid,” this is also being done in the name of energy efficiency. And it is also bad for our health.

The only available substitutes for most ordinary indoor lighting are compact fluorescent lamps (CFLs). These are being promoted as a “green” alternative because they use only one-third to one-fourth as much electricity to produce the same amount of light as an incandescent. However, CFLs produce radio waves and have become one of the main sources of “dirty electricity” in homes, schools, businesses and public buildings throughout the world. There is no mystery about why they emit radio waves. Ordinary fluorescent lamps suffer from an objectionable flicker, and in order to eliminate the flicker, manufacturers have inserted a device called a radio frequency ballast into every compact fluorescent bulb. This ballast converts house current, which reverses direction 60 times a second, into current that reverses direction 50 thousand times a second—thus eliminating the flicker but sending radio frequency energy throughout your house.

CFLs are bad for the environment in other ways as well. They contain mercury and mercury vapor, and there is no safe way to dispose of them when they wear out. Just as important for many people is that the light that CFLs give off is harsh. Whereas incandescents produce a smooth spectrum of light like the sun, CFLs emit only at discrete frequencies.

LED lighting, touted by some as another energy efficient alternative, is directional, not suitable where uniform lighting is needed, and is just as unnatural in emitting much of its light at discrete frequencies.

Yet, with no healthy alternative available, governments throughout the world are banning incandescents. Australia was the first, prohibiting sales of all ordinary incandescent bulbs as of November 1, 2009. The European Union banned incandescents of 100 watts or more as of September 1, 2009, and 75 watt bulbs as of September 1, 2010, with 60 watt bulbs to be banned on September 1, 2011 and lower watt bulbs on September 1, 2012. Canada plans to prohibit the sale of incandescents by 2012. In the United States, the Energy Independence and Security Act of 2007 requires 100-watt incandescents to be prohibited in January 2012, and 40-watt bulbs in January 2014. Many consumers are understandably stockpiling lightbulbs.

NO MORE LANDLINES

On February 8, 2011 the Federal Communications Commission took the first step toward doing away with telephone lines altogether. The telephone network is outdated, said the Commission, and will be entirely replaced by the Internet during the coming years. “Broadband

serves the same role in the 21st century that telephone service served in the 20th century,” said FCC Chairman Julius Genachowski.

As a first step toward making this happen, the FCC is proposing to re-allocate money from the Universal Service Fund, which comes from a surcharge on every customer’s telephone bill, and which until now has subsidized telephone service in rural communities, to instead pay for the development of broadband in those communities.

The Notice of Proposed Rulemaking, released on February 8, states that “ubiquitous broadband infrastructure has become crucial to our nation’s economic development and civic life.” “Networks that provide only voice service are no longer adequate for the country’s communication needs” and should no longer be subsidized, wrote the FCC.

Once this proposal is published in the *Federal Register*, the public will have 30 days to submit comments.

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