The Most Dangerous Technology Ever Invented – Part Two

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There is No Dose Response for Microwave Radiation

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The selling of cell phones is, and always has been, based on lies and deception. The biggest lie is that they are "low power" devices and that this makes them safe. That is a double lie. It is a lie because they are not low power. If you put a cell phone – any cell phone – in your hand or next to your body, you are being blasted by more microwave radiation from your phone than you are getting from any cell tower, and by ten billion times as much microwave radiation as you are getting from the sun, the Milky Way, or any other natural sources. The exposure guidelines established by the Federal Communications Commission reflect this reality: cell towers are permitted to expose your body at a specific absorption rate of 0.08 watts per kilogram, while cell phones are allowed to expose your brain at a specific absorption rate of 1.6 watts per kilogram, which is twenty times higher.

And it is a lie because low power devices are not any safer than high power devices. The reason for this is that electromagnetic fields are not toxins in the ordinary sense, and the rule in toxicology that a lower dose is a safer dose does not apply to microwave radiation. As Allan Frey wrote in 1990:

“Electromagnetic fields are not a foreign substance to living beings like lead or cyanide. With foreign substances, the greater the dose, the greater the effect – a dose-response relationship. Rather, living beings are electrochemical systems that use low frequency EMFs in everything from protein folding through cellular communication to nervous system function. To model how EMFs affect living beings, one might compare them to the radio we use to listen to music… If you impose on the radio an appropriately tuned EMF or harmonic, even if it is very weak, it will interfere with the music. Similarly, if we impose a very weak EMF signal on a living being, it has the possibility of interfering with normal function if it is properly tuned. That is the model that much biological data and theory tell us to use, not a toxicological model.”

The most thorough investigation of the blood-brain barrier effect, which Frey discovered in 1975, was done at Lund University in Sweden beginning in the late 1980s with various sources of microwave radiation and later, in the 1990s and 2000s, with actual cell phones. They found not only that there is not a dose response, but that there is an inverse dose response for this type of injury. They exposed laboratory rats to what is now called 2G cell phone radiation, and then they reduced the power level of the radiation ten-fold, a hundred-fold, a thousand-fold, and ten thousand-fold. And they found, to their surprise, that the greatest damage to the blood-brain barrier occurred not in the rats that were exposed at full power, but in the rats that were exposed to phones whose radiation was reduced by a factor of ten thousand! This was the equivalent of holding a cell phone more than one meter away from your body. The leader of the research team, neurosurgeon Leif Salford, warned that non-users of cell phones were being damaged by their neighbors’ cell phones, and that this technology was “the world’s largest biological experiment ever.”

And in a further set of experiments, published in 2003, Salford's team exposed young rats to what is now called a 2G cell phone, just once for two hours, either at full power, or at two different levels of reduced power, and sacrificed them 50 days later to examine their brains. They found that a single exposure to an ordinary cell phone operating at normal power had permanently destroyed up to 2% of the brain cells of almost all the rats. Damaged neurons dominated the picture in some areas of their brains. When the power of the phone was reduced ten-fold it caused brain damage in every rat. When the power of the phone was reduced one hundred-fold, this type of permanent brain damage was observed in half of the exposed animals.

And in still further experiments, published in 2008, they exposed rats to a cell phone for two hours once a week for a year, still using what is now called a 2G cell phone. The exposed rats suffered from impaired memory, regardless of whether they were exposed at an SAR level of 60 milliwatts per kilogram or 0.6 milliwatts per kilogram. In other words, reducing the power level by a factor of one hundred did not make the cell phone less dangerous.

The lack of a dose response has been reported over and over. Physicist Carl Blackman spent much of his career at the Environmental Protection Agency figuring out why not only particular frequencies but also particular power levels of RF radiation cause calcium to flow out of brain cells. Ross Adey at UCLA, Jean-Louis Schwartz at the National Research Council of Canada, and Jitendra Behari at Jawaharlal University in India reported the same thing. Geneticist Sisir Dutta, studying the same phenomenon at Howard University in 1986, found peaks of calcium flow at SAR levels of 2 W/kg and 1 W/kg, and also at .05, .0028, .001, .0007, and .0005 W/kg, with some effect all the way down to .0001 W/kg. The effect at 0.0007 W/kg SAR was quadruple the effect at 2.0 W/kg, in other words a 3,000-fold reduction in power level resulted in a 4-

fold increase in calcium disturbance. The frequency was 915 MHz, the same frequency that was later to be used for cell phones.

Maria Sadchikova and her Soviet colleagues, in the 1960s and 1970s, examined hundreds of workers exposed to microwave radiation on the job, and consistently found that the sickest workers were the ones who were exposed to the lowest, not the highest power levels.

Igor Belyaev, at Stockholm University, found that genetic effects occurred at specific frequencies and that the magnitude of the effect did not change with power level over 16 orders of magnitude, all the way down to 10-18 watts per square centimeter, a level that is one quadrillion times lower than what a cell phone delivers to one's brain.

Dimitris Panagopoulos, at the University of Athens, found that fruit flies exposed to a cell phone for just one minute a day for five days produced 36 percent fewer offspring than flies that were not exposed at all. When he exposed them to the phone for six minutes a day for five days, it reduced the number of their offspring by 50 to 60 percent. And the maximum effect occurred when the cell phone was about one foot away from the flies, not when it was touching the vial that the flies were in. In further research, he showed that the effect is due to DNA damage and consequent cell death caused by the radiation.

In another experiment, Panagopoulos's colleague, Lukas Margaritis, exposed fruit flies to various frequencies of RF radiation at exposure levels ranging from 0.0001 watts per kilogram to 0.04 watts per kilogram, and found that even a single exposure to any of these frequencies at any of these power levels for just 6 minutes caused a significant amount of ovarian cell death.

And in further research, Margaritis's team exposed fruit flies

to a cell phone either once for 6 minutes, once for 12 minutes, 6 minutes a day for 3 days, or 12 minutes a day for 3 days. Under each condition the phone tripled to sextupled the amount of ovarian cell death. And then this team tried other sources of microwave radiation for between 10 and 30 minutes per day for up to 9 days and found that each of them reduced the number of offspring by between 11 and 32 percent. The cell phone and the cordless phone had the greatest effect, but the WiFi, the baby monitor, the Bluetooth, and the microwave oven also substantially reduced the fecundity of the flies.

The effects on insects are so obvious that even a high school student can easily demonstrate them. In 2004, Alexander Chan, a sophomore at Benjamin Cardozo High School in Queens, New York, exposed fruit fly larvae daily to a loudspeaker, a computer monitor, and a cell phone for a science fair project and observed their development. The flies that were exposed to the cell phone failed to develop wings.

What Are We Doing to Nature?

We are distressing and disorienting not only birds, but also, as is being discovered, insects. It appears that all little creatures that have antennae use them to send and receive communications electronically – communications that are being interfered with and drowned out by the much more powerful communications of our wireless devices.

When honey bees perform their waggle dance to inform one another of the location of food sources, it is not only a visual dance but an electromagnetic one. During the dance they generate electromagnetic signals with a modulation frequency between 180 and 250 Hz. And they send another kind of signal, which has been called the “stop” signal, up to 100 milliseconds long, at a frequency of 320 Hz. The stop signal is used when the colony already has too much food, and it causes the dancers to stop dancing and leave the dance floor. Uwe Greggers, at Freie Universität Berlin, discovered that

bees will start walking and actively moving their antennae in response to artificially generated electromagnetic fields that imitate these natural signals, even in the absence of any visual or auditory cues. Bees whose antennae he had removed or coated with wax did not respond to these signals.

Pollination is also dependent on electromagnetic communication – between bees and flowers. Bees carry positive charge on their bodies from flying in the global atmospheric electric field, while flowers, being connected to the earth, carry a negative charge. Dominic Clarke, at the University of Bristol, has proved that not only does this facilitate pollen transfer from flowers to bees, but that bees sense and are attracted not only to the colors of flowers but also to the distinct patterns of their electric fields. The electric field of a flower diminishes immediately after being visited by a bee, and other bees "see" this and only visit flowers whose electric field is robust. While honey bees see the fields with their antennae, bumble bees see the fields more with the hairs that cover their bodies, which not only make them such distinctive creatures but also function as a kind of antenna.

In 2007, German biologist Ulrich Warnke published an important booklet in both English and German titled Bees, Birds and Mankind: Destroying Nature by "Elektrosmog" (Bienen, Vögel und Menschen: Die Zerstörung der Natur durch ‚Elektrosmog'). In it, he reminded us that there are only two long-range forces – gravity and electromagnetism – that shape everything in the universe including our bodies, and that we ignore that fact at our peril. Electricity is the foundation of life, he warned, and "this destruction of the foundation of life has already wiped out many species forever." We cannot immerse our world, he said, in a sea of electromagnetic radiation that is up to 10,000,000,000 times as strong as the natural radiation that we evolved with without destroying all of life. He summarized the research that he and others had done with honey bees. It is no wonder, wrote Warnke, that bees are disappearing all

over the world.

They began disappearing at the dawn of the radio age. On the small island lying off England's southern coast where Guglielmo Marconi sent the world's first longdistance radio transmission in 1901, the honey bees began to vanish. By 1906, the island, then host to the greatest density of radio transmissions in the world, was almost empty of bees. Thousands, unable to fly, were found crawling and dying on the ground outside their hives. Healthy bees imported from the mainland began dying within a week of arrival. In the following decades, Isle of Wight disease spread along with radio broadcasting to the rest of Great Britain, and to Italy, France, Switzerland, Germany, Brazil, Australia, Canada, South Africa, and the United States. In the 1960s and 1970s its name changed to "disappearing disease." It became urgent in the late 1990s with the wireless revolution, and became a worldwide emergency by 2006, when it was renamed "colony collapse disorder." Today not only domestic bees, but all wild bees, are in danger of extinction.

Amphibians are not only disappearing, but large numbers of amphibian species have already gone extinct, even in the most remote, pristine areas of the world – pristine, that is, except for communication towers and radar stations emitting microwave radiation. Amphibians are the most vulnerable of all classes of animals on the planet to electromagnetic radiation, and they have been dwindling and going extinct since the 1980s. When I looked into this in 1996, every species of frog and toad in Yosemite National Park was disappearing. In the Monteverde Cloud Forest Preserve of Costa Rica, the famous and highly protected golden toad had gone extinct. Eight of thirteen frog species in a Brazilian rainforest preserve had gone extinct. The famous gastric-brooding frog of Australia was extinct. Seventy-five species of the colorful harlequin frogs that once graced streams in the tropics of the Western Hemisphere were extinct. Today, more than half of all known

kinds of frogs, salamanders and caecilians (snake-like amphibians), amounting to 4,300 species, are either extinct or in danger of extinction.

In 1996, when cell towers marched into remote areas of the United States, mutant frogs began turning up by the thousands in lakes, streams and forests all across the American Midwest. Their deformed legs, extra legs, missing eyes, misplaced eyes, and other genetic mistakes were frightening school children out on field trips. In 2009, wildlife biologist Alfonso Balmori did a simple, obvious experiment on the balcony of an apartment in Valladolid, Spain not far from a cell tower, an experiment that proved what was happening: he raised tadpoles in two identical tanks, except over one of them he draped a thin layer of fabric that was woven with metallic fibers, which admitted air and light but kept out radio waves. The results shocked even Balmori: in a period of two months, 90 percent of the tadpoles in the tank without the shielding had died, versus only 4 percent in the shielded tank.

Similar shielding experiments have confirmed, in spades, what is happening to birds, and what is happening to our forests. Scientists at the University of Oldenburg in Germany were shocked to find, beginning in 2004, that the migratory songbirds they had been studying were no longer able to orient themselves toward the north in spring and toward the southwest in autumn. Suspecting that electromagnetic pollution might be responsible, they did for their birds what Balmori did for his tadpoles a few years later: they shielded the aviary from radio waves during the winter with aluminum sheeting. “The effect on the birds’ orientation capabilities was profound,” wrote the scientists. The birds all oriented toward the north the following spring.

And in 2007, in a backyard laboratory in the foothills of Colorado’s Rocky Mountains, Katie Haggerty decided to do the same experiment with aspen seedlings. She wanted to find out if radio waves were responsible for the decline of aspen trees

all over Colorado that had begun in 2004. She grew 27 aspen trees – nine without any screening, nine with aluminum window screening around their pots which kept out radio waves, and nine with fiberglass screening which kept out just as much light but let in all the radio waves. After two months, the new shoots of the radio-shielded aspens were 74 percent longer, and their leaves 60 percent larger, than those of either the mock-shielded or the unshielded aspens. And in the fall, the shielded trees had large, healthy leaves in brilliant fall colors that aspens are famous for: bright orange, yellow, green, dark red, and black. The mock-shielded and unshielded trees had small leaves in drab yellow and green, covered with gray and brown areas of decay. The only thing that had changed in Colorado's Rocky Mountains in 2004 was the installation of a new emergency communication system called the Digital Trunked Radio System composed of 203 radio towers whose transmissions covered every square inch of the state.

(to be continued)

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