

CHAPTER ELEVEN

THE NEW PLAGUES

*Where did you come from, baby dear?
Out of the nowhere into here.*

Nursery rhyme

In the preceding chapters, the evidence for harmful biological effects from exposure to abnormal, man-made electromagnetic fields was discussed from the point of view of laboratory and epidemiological data. This chapter will present the *medical* evidence relating these fields to recently occurring significant changes in the spectrum of human disease.

We are currently facing diseases that were unknown just a few years ago. We are also seeing disturbing increases and alterations in certain diseases we believed we had conquered. While the AIDS epidemic commands the headlines, there are other illnesses of equal importance—such as Alzheimer's disease, cancer, and developmental defects—that have not received the same amount of attention. The new scientific paradigm we have been considering may provide some clues to these new plagues, some informed speculation, and some indication of the directions we should take.

The global environmental alteration brought about by our use of electromagnetic energy has exposed all living organisms, from viruses to humans, to novel energetic fields that never before existed. We have seen how these fields interact with sensing systems designed to perceive the normal electromagnetic environment, producing abnormal bioeffects that result in changes in the incidence of diseases. This interaction appears also to have been the origin of some new disease states and of a number of unexpected changes in the characteristics of some preexisting disease states.

In theory, a disease that suddenly appears out of nowhere may be caused by a genetic change in a preexisting microorganism (a bacterium or virus) that creates new pathological characteristics. Or, it may be caused by major declines in resistance to disease, making people susceptible to attack by microorganisms previously incapable of producing disease. In practice, things are not quite so simple. Hippocrates was correct in believing that the clinical characteristics of a disease are the result of the combined actions of both the disease-producing agent and the patient's body. When we're facing a new disease, it's often difficult to tell which is which.

ELECTROMAGNETIC-HYPERSENSITIVITY SYNDROME

When I first acquired some public notoriety as a researcher on the biological effects of electromagnetic fields, I began receiving a trickle of letters from persons who insisted that they were highly "allergic" to such fields. Some said they had even moved to remote, rural areas that are free of most electromagnetic fields. I must admit that for the first few years I was highly skeptical of such claims and thought that the conditions must be purely psychological in origin. But during the past five or six years, the trickle of letters has turned into a flood that I can no longer ignore. Fortunately, other medical scientists have become interested in this specific condition and involved in establishing its diagnosis.

Dr. William Rae, a former surgeon from Texas, discovered his own sensitivity to electromagnetic fields while working in the modern operating room. As medicine became a technology, the operating room became a home to more and more electrical devices. Today, in my opinion, it could well be classified as a hazardous environment. By eliminating other sources, Dr. Rae determined that his allergic and neurological symptoms were caused by the electromagnetic fields in the operating room. He subsequently discovered that he was not alone in his hypersensitivity, and that there was a growing population of patients with the same condition. These people are typically told by their physicians that their symptoms are "all in their minds" and that they should seek psychiatric care.

Rae became outraged about this situation, and he established a clinic to deal with this problem as a real entity. His Environmental Health Center in Dallas, Texas, is probably the best-equipped clinic of its kind in the country. The patients are tested through exposure to a spectrum of electromagnetic fields in such a fashion that they

are unaware it is being done. In most patients, a consistent sensitivity to certain specific frequencies can be found and quantified through objective measures of the activity of the autonomic nervous system. In this way, Rae has proved that the electromagnetic-hyper-sensitivity syndrome is a real clinical entity.

People with this syndrome have a number of characteristics and symptoms in common. The following case history is typical.

Mary M. (not her real name) had worked for an international company for many years as a computer supervisor. She enjoyed her work and had had no medical problems of note until she was asked to try out a different make of computer that the company was considering using. The machine seemed perfect—it was easy to use as well as fast and powerful, and she enjoyed working with it the first day. She went home that night with a minor headache, which subsided with an aspirin. Returning to work the next day, she used the new machine for less than an hour, and the headache returned. She took another aspirin and wondered whether she was "coming down with something." As she continued to work with the new computer, she became nauseated and dizzy, and the headache did not go away.

Mary then went to the dispensary, where she was told that she had a slight fever and was no doubt "coming down with the flu." She took two days off, and she felt fine when she returned to work. But within minutes of turning on the computer, she experienced the return of the nausea, dizziness, and headache. A short time later she began to experience severe fatigue, an inability to concentrate, and difficulty with her vision. As she continued to work, the symptoms became worse, until finally she could not continue. She began to think that perhaps something was wrong with the machine, and she mentioned this to the dispensary staff before going home again. When she reached her home, she noted that her face and the exposed portions of her neck and chest were noticeably reddened. This time she took a full week of sick leave; on returning to work she went straight to the dispensary so that the doctor could see that she was quite well before she used the new machine. She was told that in her absence, the manufacturer had checked her machine and found that it was operating normally and not producing a harmful field.

As she opened the door to her area, she felt as though she "had walked into a blast furnace." The whole room had been equipped with the new machines, and her staff was busily working with them. She stayed for only a few minutes, during which time she became extremely ill and had to leave. This time the doctor asked if she were

having any emotional or personal problems of any kind, and he suggested that if so, she see a professional about them. Mary refused to return to work, and she left for home.

She then noticed that her TV and stereo produced the same symptoms in her if she was within a few feet of them. Over the next few weeks, her condition gradually worsened, until even using the telephone made her ill. She also developed what appeared to her to be "allergies" to sunlight and to the smells of such things as laundry bleach and perfumes, all of which made her feel nauseous and dizzy.

The skin rash reappeared, and Mary consulted a dermatologist who told her that the electromagnetic radiation from the computer was the culprit and that he had seen similar cases. He recommended that she go away for a few weeks to some very rural area and see whether she recovered. His other patients had sometimes been able to return to work after such a respite from electromagnetic fields.

Mary took his advice, and she did get better. However, when she returned to the city, her symptoms returned. She never returned to her old job, and she now lives in a very rural area of a foreign country, where she is fine.

One final note on this case is that the computers are no longer in use by the company, which refuses to discuss the situation.



Almost all of the patients who have consulted me for this condition experienced a similar abrupt onset of symptoms. Computers were not always the common factor, but exposure to a novel electromagnetic field of some kind was always the inciting cause. These people experienced the same symptoms and became sensitive to many common devices that had never before produced any symptoms in them (for example, TVs, computers, stereos, fluorescent lights, telephones, electric heaters, high-voltage power lines, and electronic security systems).

Within the past year, automobiles have joined the list of devices that can produce the initial sensitizing field exposure. These are always the new, computerized models, and the patients find that they are quite able to drive the identical make and model if it is not computerized.

As with any medical condition, there is a range of severity. Wit

environment, even several miles away, can be extremely complex.

- Encourage satellite-communications technology rather than ground-station transmitters. Satellite communications remove the exposures to a higher layer in the atmosphere (and therefore away from people), and when the signals return to earth they are typically disseminated through wired systems, like fiber optic cables, rather than through additional wireless channels. But be sure that the areas around satellite uplinks are large enough, are well monitored, and are scrupulously measured for emissions. There can be significant side lobes of radiation from uplinks.
- Require the regular measurement, monitoring, and reporting of exposures from all transmission facilities, including those of police and fire departments and paging services, by the transmission facilities themselves, but have the reports verified by an independent testing company. Because wave propagation can be complex, depending on such factors as frequency, power output, nearby structures, topography, conductive materials like metal water towers, and unexpected couplings with other frequencies from power lines or other radio towers, a handful of communities have enacted a specific test protocol that was developed by a bioengineer and health physicist, Carroll Adam Cobbs, of Seattle, Washington (see accompanying table).

The Cobbs protocol is designed to test various aspects of the ambient background before a tower goes on-line and again afterward. It is intended to provide a crucial piece of information for future epidemiological studies that has been completely lacking in the past—the precise environmental alteration at a set moment in time from which health effects might be observed. Existing towers can be shut off and the environment tested; then the facilities can be turned back on and the environment retested. This will give a community precise knowledge about what the RF/

THE COBBS TEST PROTOCOL*

Test Modality	Suggested Equipment
Microwave power density measured at several locations	HP 437B Power Meter with 8542A Thermistor sensor and calibrated horn antenna, to include SWR measurements at each setup
RF field density using broad-band survey meter	Holaday Instruments RF Survey Meter with Isotropic Broad-band Probe
Broad-band spectrum analysis covering the range from 50 Hz to 2.9 GHz	HP 35665A (Low-Freq.) and HP 8591A or HP 8560 (VHF to microwave)
Carrier noise measurement	HP 11729C Carrier Noise test set
Transmitter test and RF signal characterization Also Analyzer to record modulation characteristics of the detected signals	HP 8901A Modulation
Frequency and time-interval analysis to graphically illustrate frequency and time and phase interval information	HP 5372A Freq. and Time Interval Analyzer

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Since 1997, the **Cellular Phone Taskforce** acts as a clearinghouse for information on the health effects, including injury and death, reported worldwide as being caused by radiofrequency radiation from digital cellular phones base stations and other wireless facilities. The taskforce advocates that the regulations in place, including the strictest, such as the Polish 2 V/m standard, are not adequate to protect the human heart, nervous system and other biological systems from electromagnetic injury. A summary of the death statistics associated with the digital PCS (around 1.9 GHz) systems installed in selected United States cities is shown in the table below. Individuals living within 100 metres of a wireless facility of any kind tend to report symptoms such as dizziness, nausea, memory loss, inability to concentrate, irritability, rise in blood pressure, peculiar pressure behind the eyeballs, joint pains moving around the body, hurt of feet sole, high-pitched noises in their ears, itchy systemic rash and even internal bleeding -- all symptoms of radiowave sickness. Clinics report an immediate increase in respiratory illness: bronchitis, flu, pneumonia and asthma during the first weeks of PCS base station start-up and hospitals become inundated.

It is argued that current regulations (60V/m or 1 mW/cm² in Canada) are designed for the far field under uniform conditions from single emitters, and do not take into account the near field; complex field interactions from multiple emitters -- they do

not even come close to protecting the public from even the serious thermal effects. Depending on conditions of grounding, resonance and reflection, real-life exposure to a single emitter in the far field can vary as much as 430X. In 1977, **Om P. Ghandi** reported in *Radio Science* how the presence of metal objects in the environment, or even inside the body (dental fillings, surgical implants, etc.) can locally increase exposure 100X. **Arthur Firstenberg**, president of the Cellular Phone Taskforce has published a book, *Microwaving the planet* which includes a current literature review of over 200 sources (available from the Secretariat). He also edits the publication, *No place to hide*, available for \$30 U.S., and \$40 elsewhere from: P O Box 100404, Brooklyn, New York 11210. (718) 434-4499. Another periodical pursuing this interest is *Electrical sensitivity news*, published by **Lucinda Grant, Weldon Publishing**, P O Box 4146, Prescott, Arizona 86302. \$20 U.S., \$35 foreign; (520) 778-4637; fax: (520) 495-3168.

A court challenge to the safety of wireless communications against the **Federal Communications Commission** will be heard in the U.S. Court of Appeals for the Second Circuit in New York City. The Cellular Phone Taskforce, representing thousands of individuals who suffer from electrical sensitivity alleges that digital wireless facilities are causing illness, disability and death and is suing to have the current "safety rules" set aside, sec-

**Increased weekly mortality, compared with installation of PCS service
selected United States cities**

<i>city</i>	<i>PCS service</i>	<i>start date</i>	<i>mortality increase</i>	<i>duration of increase</i>
San Diego	Pacific Bell	11/96	15%	4 weeks
Los Angeles	Pacific Bell	7/97	27%	4 weeks
New York	Omnipoint	11/96	10%	11 weeks
Chicago	Primeco	12/97	11%	10 weeks
Boston	Sprint	10/97 <i>partial service</i>	5%	
Boston	Sprint	1/98 <i>full service</i>	20%	9 weeks
Portland	Sprint	2/98	16%	12 weeks

estimated deaths: 10,000

Data sources: Center for Disease Control, Atlanta
Research: Arthur Firstenberg