

# A Realistic Assessment of the Danger In Electromagnetic Fields Pollution

By Tom Valentine

Dr. William Rea, probably the world's leading clinician in the area of ultra-sensitive individuals, told a story about a woman patient who almost passed out in her wheelchair when someone flicked on the ceiling fan, sending tiny amounts of EMF (electromagnetic fields) into the room.

Obviously, in that instance and with that particular woman, the very low dose of EMF emanating from the fan affected her body. What about the rest of us, the rest of the time? Even though we can't feel anything, is EMF effecting our cells, our enzymes and

hormones and other biochemistry?

A recent media blitz told you EMF is not dangerous at all. Is that true?

Scientists say the juJI is still out on this one. But is it, really? *True Health* has taken a long look at the facts.

The first serious warning came in 1979 when scientists looking into the epidemiology of childhood leukemia found that children living in close proximity to high current power lines developed twice the rate of that cancer than national norms. This seminal study spawned other epidemiological studies throughout the 1980's. The link between high

voltage power lines and deadly cancer grew in stature. One key study involved stunning rates of rare brain cancer among power company employees who worked closely with power lines and equipment.

As the decade of the 90's dawned, the EMF concerns picked up steam. The EPA released a warning in December 1990 that suggested "a causal link" between very low EMF and leukemia, lymphoma and brain cancer.

Notice, now, that the time line and journalistic trail of EMF in the 90's shows a manipulation of the facts so that what was becoming a major health concern early in our present decade has now been headlined: "nothing to fear at all."

*Time*, December 24, 1990, featured "Mystery-and Maybe Danger-in The Air," a story of genuine concern about the health hazards of the electronic age.

In its April!, 1991 issue, the *Wall Street Journal* told how the major utilities were finally starting to take a serious look at possible health dangers from EMF pollution.

And well they should have looked at it! In the summer of 1991, Paul Brodeur, author of "The Great Power Line Cover Up" who has made

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## Dental Amalgam..Continued

themselves. In some instances they even use beryllium, and when you mention this to toxicologists they go nuts."

When asked whether pure gold is a good dental material, Huggins said that only about 10% of people react poorly to gold, and platinum is even better with only one percent reacting poorly. However, platinum is expensive and some people are persuaded to water it down with palladium. This is a bad idea, Huggins warned.

Huggins suggests that people have blood tests to determine the "compatibility" of their immune systems with the dental "composites" to be used.

*True Health* is the first publication to announce the impressive Huggins clinical studies with living humans and dental amalgams, and we are doing our best to spread the word far and wide so that one of the biggest pollution problems facing almost all Americans-mercury amalgam dental fillings-becomes a part of our "barbaric" past.

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a career of tracking EMF hazards to health, presented an amazing amount of sickness and death in three tiny areas located close to high voltage power lines and electric company substations.

For example, along the one-block distance of Meadow Street in Guilford, Connecticut-the street where Connecticut Power and Light has an active substation emitting EMF-Brodeur discovered the following, taken from his feature in *New Yorker* magazine, July 1990:

*"The fact that two malignant brain tumors, a malignant eye tumor, and a nonmalignant brain tumor have developed in people living in four adjacent houses on Meadow Street which are situated across from the substation and close to its high-current wires, together with the fact that the other non-malignant brain tumor occurred in a woman who lived just a few houses away speaks for itself. The fact that one of the brain cancers has been found in a seventeen-year-old girl, whose chances of developing such a neoplasm are only about one in fifty thousand, makes the substation additionally suspect. So does the fact that a nonmalignant ovarian tumor occurred in a twenty-five-year old woman who had lived most of her life at 36 Meadow, and that her niece-a thirteen-year-old girl, who had lived for eleven years at 48 Meadow-developed a nonmalignant tumor on*

*her tibia."*

And there was still more unusual illness documented along that street, where one resident had commented on how many lightbulbs were burned out because his home was so close to the substation.

Brodeur also documented virtually identical health problems occurring to residents of Dukeville, North Carolina, a Duke Power Company town and to people in Montecito, the affluent Santa Barbara, California suburb with high current power line pollution.

In 1993 it looked as though government was going to be forced to act on behalf of public safety because public awareness was soaring. Comedian Eddie Murphy as the con-man turned Congressman in "The Distinguished Gentleman" became convinced that EMF endangers American children. The Larry King show and the TV series "Civil Wars" also featured EMF hazards.

In this milieu of concern, the utilities were having nightmares about the costs in their future. While the cost would be very high for them to make necessary corrections to reduce EMF pollution, it would be a drop in the bucket against the cost that most concerned the utilities-the liability bugaboo lurking dangerously close to the surface.

In fact, official concerns about the potential health hazard of EMF reached a zenith in early 1994 when the *Ameri-*

*can Bar Association Journal* featured a story suggesting that massive tort litigation over EMF pollution is coming to America; with claims said to be even more devastating than the asbestos injury claims of previous decades. The subhead to the main headline in the law journal article summarized the thinking succinctly:

*"We live surrounded by electromagnetic fields. Some say they are deadly. With these fields ail around us, the litigation potential could dwarf the asbestos claims of the past decade."*

At the time of the law journal article, a San Diego jury had rejected Ted and Michelle Zuidema's claim that San Diego Gas & Electric was responsible for the Wilm's tumor on their daughter's liver. However, despite this setback for the first major case against a utility, the law journal predicted a continuing flood of expensive litigation. They noted: "At least nine other power line cases are pending across the country."

This very real threat of massive lawsuits surely sent tremors through the utility-government establishment. Something had to be done. **If** the truth supported damages, the truth could not come out.

Personal injury suits almost always revolve around technical and scientific testimony. Sometimes the whole truth and nothing but the truth comes out in court. Unfortunately, that is more often the exception than the rule.

Agenda-driven science has become a fixture in our society, and the concern over dangers inherent in EMF already has many scientists promoting the agenda that proclaims "EMF is perfectly safe."

In the *Zuidema v. SDG&E* case, the family had to prove that the EMF from the power lines actually "caused" their daughter's cancer. The experts against them pointed out that they could point to no "direct" proof that EMF causes any cancer. They could only recite the epidemiological studies that "infer" an association between EMF and some kinds of cancer. All the "facts" pertaining to the illness history listed by Brodeur, for example, prove nothing under established scientific criteria.

What we have here is word games clouding truth.

In San Diego the defense brought out the president of the National Wilm's Tumor Registry to testify that in the 7,000 or so cases recorded since 1969, there was no "revealed link" with EMF whatsoever. Was that truly relevant in this individual's case? And, what does "revealed link" really mean?

Finally, the judge put frosting on the case by instructing the jury that they had no choice but to conclude that the EMF levels in the Zuidema home "were not injurious to health." This controversial instruction surely influenced the verdict. The judge might as

well have saved time by taking "judicial notice" of the same "facts" and putting the entire case out of its misery. Of course, judicial notice is usually reserved for things like the sun rises in the east and sets in the west, or the law of gravity exists, and should not be used for confounded scientific testimony.

By so instructing the jury, the judge was taking it upon himself to interpret the scientific evidence for the jury. This is becoming more and more common in courts as the issue of so-called "junk science" is being debated. At *True Health* we believe the very idea of "junk science" is designed to help maintain the established control over new ideas and discoveries. Reform is apparently needed, but not in the area of restricting technical and scientific testimony to preset standards.

The law journal commented: "Despite continuing controversy over the verdict, one conclusion on which all participants and observers remain settled is that the Zuidema trial settled nothing. The scientific complexity of EMF, the inconclusive nature of studies and the enormously high stakes involved are fodder for an asbestos-like stream of litigation in the coming years."

Perhaps this is the stuff of a trial lawyer's dreams, but it can be a health nightmare for American families whose main concern is the health of their children and themselves.

That *ABA Journal* article was a catalyst.

In early 1995, as if reacting to the published litigation threat, a committee of physicists from the American Physical Society voted to proclaim that the physics involved in calculating cellular electrical fields and low level EMF make it mathematically impossible for EMF to penetrate cells or do any serious harm at the low background levels found in homes and in proximity to power lines. The media dutifully blared forth that physicists proclaimed EMF perfectly safe.

Later in this article we will show you how the physics and math of cell electricity and EMF don't really add up to "perfectly safe" because other factors not considered by the physicists are involved.

Nevertheless, the physicist committee struck a blow for the defense in the annals of courtroom expert testimony.

Whether scientists and the media admit it or not, the link between EMF and human health is indeed established. We know, for example, that EMF can be used to knit certain bones together more rapidly or accelerate the healing processes by attaching electrodes to the body and using electric stimulation.

This positive effect is scientifically proved.

It is also proved that if the electric current in the electrodes being used for trying

healing is reversed in polarity, the effect on the body is deleterious rather than healing.

That much has been established.

However, based on the scientific rules, the link between much lower level EMF as an environmental pollution and deleterious health effects is not so clear cut. In fact, this link has recently been loudly dismissed by the major media following release of a report by the National Research Council of the National Academy of Sciences.

The *New York Times* headline read: "Panel Sees No Proof of Health Hazards from Power Lines." *Newsweek*, using a typically cute play on words, headlined the same story as follows: "The Force is With You; Electromagnetic Fields Beat the Rap."

The major news outlets weren't alone in "misspeaking" the report, even the prestigious medical journal *Lancet* headlined the story: "US Panel says electromagnetic fields not harmful." (There's the agenda, again.)

That is *not* what the NAS report said. The report, titled: "Possible Health Effects of Exposure to Residential Electric and Magnetic Fields" released October 31, 1996 did not give EMF a "clean bill of health" as reported.

The headline in the *Journal of the American Medical Association* was the closest to accurate: "EMF Exposure Study Rules Out 'Causing'

Cancer, Finds Association With Leukemia Puzzling but Real."

*True Health* contacted Dr. Richard A. Luben to set the record straight on this latest report. Dr. Luben is a PhD biochemist and professor at the University of California, Riverside, specializing in biochemical signal transduction. This specialty deals with the living bodies use of electrochemical phenomena. He is currently the president of the Bioelectromagnetics Society (BEMS), an international scientific body established to promote EMF research. He is a member of the National Council on Radiation Protection and served on a number of expert panels, including the National Research Council, which issued the recent NAS report.

We asked Dr. Luben if he believed environmental exposures to EMF could influence human health. His answer over the phone was an unequivocal yes, and he is continuing his research into the possible mechanisms wherein EMF can effect living human cells adversely.

In writing, however, Dr. Luben tempers his strong view with the typical scientific equivocation that has become the hallmark of today's peer-reviewed research. First of all, the definition of proof requires that experiments be reproduced by others and give the same results. Sometimes it takes years to get others to even try reproducing the experiment, so the issue can remain "un-

proved" despite clear experimental evidence. Secondly, no researcher wants to research himself out of a job. **If research** is conclusive, then there is no need for "more research." You will invariably see equivocation and a call that "more research is needed" in technical papers, even if the issue is apparently and reliably clear. In this redhot, agenda-driven issue, the equivocation is even worse than usual with committed scientists covering their backsides by remaining inconclusive. This kind of weasel-wording opened the door to the media to hype the "EMF is safe" notion when EMF is certainly anything but "safe."

In a written response to the media outbursts following the NAS report, Dr. Luben responded to the question as follows:

"Even though I am not an epidemiologist, I have looked in detail at all the epidemiological data available, and I have listened to some of the best epidemiologists discussing the data. My personal scientific opinion, as well as the conclusion of most of these committees, has been that there is a convincing, though small, statistical association between proximity to high current power lines, power stations or transmission lines, and childhood leukemia. In homes that are near these power sources, there is about a 50% elevation in the number of children who contract leukemia."

Now, you and I would

think a 50% increase in the leukemia rate is surely significant, and in reality it is. However the scientific reality concerning statistical significance has been so garbled with jargon in the case of EMF and health it's futile and frustrating to the direct, black and white, "let's tell it like it is" personalities.

"Let me make it clear," Dr. Luben added. "Proximity to power sources *IS* (emphasis his) associated with minimally elevated incidence of rare disease, childhood leukemia, when it is averaged out over a large population of people, who are similar in most respects other than their proximity to power sources. Also, proximity of residences to power sources does increase the magnetic fields in homes, again when measured across a large population group..."

If we stop right there, we can see clearly that research shows EMF to be a dangerous form of pollution. However Dr. Luben continued:

"But the variations in these two population groups are pretty large. So large, in fact, that when we try to merge the two types of measurements, leukemia and measured magnetic fields, the two variables end up not being correlated with one another at a level considered by most experts to be statistically reliable. So, the statistics don't support a cause-and-effect relationship between fields and leukemia at this point. But, on the other hand,

because these statistics are so basically weak, we also can't rule out the possibility that there is such a relationship."

This is obvious obfuscation. He has said that the cancer numbers are significant, but the field measurement numbers aren't. *In* the NAS report it was admitted by the panel that the actual fields involved in the brain cancer-power company employee studies, for example, were not measured, but only "inferred" based upon guesswork, so why are they given so much credibility-to fit the agenda?

Dr. Luben continued: "The NAS report also concluded that there are many laboratory findings, on animals and cells in culture, that demonstrate effects of EMF on cellular processes. Some of these processes can be associated with increased cancer or with cancer-like activities of cells. However, these effects have only been observed reliably and reproducibly at field strengths which are much larger, sometimes by hundreds or thousands of times, than those in households near power lines. So, it is not clear whether these findings can be applied to human cancers or not.

"So, we are left with a confusing set of findings," Dr. Luben admitted, "Cancer is increased in situations where we can logically infer increased electrical and magnetic fields. But the actual measured fields, though they are generally higher where we expect them to

be higher, are not statistically locked with the cancer data sufficiently well to prove a cause-and-effect relationship. And, though EMF can tend to shift cells toward cancer in the lab, it isn't clear whether this can occur in the environment. This situation generates a lot of questions."

Yes it does generate a lot of questions. Here are eight of them listed by Dr. Luben:

1. Arc EMFs actually causing elevations in cancer?
2. If so, why don't the locally measured fields correlate well with the findings?
3. Are we measuring the fields properly?
4. Is there an unknown variable which needs to be included?
5. If there is a relationship, what is the cellular mechanism involved?
6. Is it even *possible* for EMF at household levels to have effects on cells?
7. If EMFs are not responsible for the observed elevations in cancer, what is?
8. Regardless of the cause, can we prevent cancers associated with power sources?

These questions have generated a lot of funding for more research, and that's a good thing, however Dr. Luben noted:

"Some people are loudly stating that we don't need to know any more, and that research on these questions needs to be stopped now."

He would not elaborate on who these "some people"

activation by a signal transduction even. *In fact, just about all of the known mechanisms for producing cancer in cells have to do with modification of the signal transduction systems in those cells, systems which regulate growth and differentiation among many other characteristics of cells.*" (emphasis mine)

This ongoing research by Dr. Luben is tremendously relevant. At *True Health* we have long advocated that science needs to concentrate more on the living, breathing, active human and less on the cell cultures and caged animals. Living bodies are not static, they are energetic-constantly moving, constantly active, constantly thinking. The cells of our bodies are likewise constantly in a variety of motions, fomenting biochemical actions and reactions. This means that during the ebbs and flows of all this action both "timing" and "interferences" play an important role.

Hypothetically, take the case of an 11 year old girl who happens to live near high current power lines. She is typical of girls her age and eats a typically poor diet. Her body will encounter the EMF whenever she is home. Under normal, circumstances, even though she is not especially robust and healthy (she avoids healthy fat in her diet because it's the thing to do these days, and she is probably deficient in B-vitamins), her body most likely would cope with the

effects of the low dose EMF. However, this week she had cavities in her teeth filled for the first time. She now sprouts four new dental amalgam fillings. After leaving the dentist's office she and some friends cross a park where a custodian is spraying the trees and bushes with pesticide. He is wearing long sleeves and a mask. The girls comment on the smell and run out of the park, but they have been doused. When the girl returns home to the steady low dose of EMF, she realizes she has disobeyed a parental order and she is grounded for a week by her angry parents. In a funk up in her room, she washes and dries her hair with a hair blow-dryer, thereby boosting the ambient EMF in proximity to her body.

Now, with the hair dryer blazing, her body is bathing in slightly enhanced EMF while several new traumas and a stress factor are also at work. Is it possible that this "ordinary" combination of events in an American girl's life could trip some hormonal-enzyme wires that give leukemia or brain cancer cells a start?

We might not be able to say yes, for sure, but it's certainly a lot more logical than saying no, for sure, as the media has recently done. There is no denying that biochemical stresses will be taking place that had not taken place previously. Have any of the epidemiology studies looked for and cataloged such things? No, they

haven't even tried. Of course, if the girl gets leukemia do her parents sue the power company, or the hair dryer manufacturer, or the dentist, or the park system? Or themselves for letting her get by on a lousy diet?

Dr. Luben, who seems to relax and speculate more freely in private conversation than he does when rendering professional opinions in print, said he thought these speculations were interesting. *He* had his own kind of speculation about the low dose EMF problem:

"In our more recent studies we have looked directly at leukemia cells, in collaboration with Dr. F. A. Uckun of the University of Minnesota. We found that not only PKC, but also a series of enzymes known as protein tyrosine kinases (PTK) were activated by exposure to the fields. These PTK enzymes are also involved in cell growth and differentiation (cancer factors). Dr. Uckun's group had previously shown that human leukemia cells, derived from children with leukemia, have elevations in the same groups of enzymes that we showed were activated by EMF exposure.

"Now, this does not prove that EMFs cause or even increase the growth rate of human leukemia cells, but it may be a step in the right direction. We are continuing to collaborate with Dr. Uckun on looking at the enzyme pathways inside cells, and he is

to find better ways to look at whether particular types of leukemia cells can be identified as being particularly sensitive to EMF exposures.

"Finally, to those who continue to say no plausible mechanism has been found to explain EMF action on leukemia, I would say that these findings do, indeed, offer at least one plausible, though as yet unproved, mechanism which might explain increased leukemia rates in children exposed to EMF.

"But there are still problems. Although we have decreased our exposures over the years from 10 gauss, 10,000 times an average household level, to as low as 100 milligauss, still 100 times the household level, we haven't been able to get reproducible effects on bone or leukemia cells below that level. It could be that we can't duplicate in the laboratory the same environment the cells are exposed to in the body (hear, hear!).

"It could be that other variables are needed, or that the time of exposure has to be longer than we can reproduce in the lab. Leukemia may need months or years of exposure to appear, for example. It could be that short exposure to high field levels, transients, is what needs to be looked at since we can see changes in cell metabolism with as little as 30 seconds exposure to a 1 gauss field, which is a condition that could easily occur in an average household while using some

electrical appliance.

"The problem of what happens at low exposures, close to household levels, is why there is so much interest in the work of Robert Liburdy. He showed a change in the responsiveness of breast cancer cells to a hormone, melatonin, which may be somehow involved in regulating breast cancer development or growth in living animals. The cells grew more rapidly in the presence of EMF plus melatonin than they did in the presence of melatonin alone. This change was found at about 12 milligauss (mG), a level still above normal household levels, but one that can be found in many houses.

"Fields of 12 mG and more can also be found in electrical industries where increased breast cancer has been suggested by epidemiology. So these data could potentially be very important. In some of his more recent work, Liburdy has extended these findings to show that sensitivity of the breast cancer cells to the anticancer drug tamoxifen is blunted by the same 12 mG EMF exposures. This may imply the participation of an estrogen receptor, which is known to be a major variable in the survivability of breast cancer in humans.

"As things stand now, Liburdy's work is published in the peer reviewed literature. Two other labs, Dr. Carl Blackmun at EPA and my own, have reported at international meetings that we were able to

replicate the original Liburdy findings with melatonin. If and when our reports appear in the peer reviewed literature to confirm Liburdy's, we will have established by credible scientific criteria that an effect exists at 12 mG, probably the lowest field strength for reproducible EMF effect yet.

"So, in answer to your question, I do think this is important data. But does it explain or prove a link between EMF and cancer? No, I don't think so at this point. There are a lot of problems relating in vitro effects (test tube effects) to in vivo effects (living body effects), and there are a lot of variables in this system that still need to be examined. But these are hopeful findings, and, I might add, yet another plausible, though unproved, mechanism that may explain a link between EMF and cancer.

"I think that the questions that are most important for the future are: what do we know about exposure to high field strength 'transients' in households near power sources? Can short exposures to high levels of EMF, around 1 gauss for example, cause long term changes in the cancer potential of cells in the body? How can these transients be detected or prevented? Is it possible that combining EMF exposure with low-level hazards such as second hand smoke or pollutants cause the hazards to increase? Is the connection between breast cancer and EMF exposure real?

If so, how many people are at risk? What are the cellular and molecular mechanisms involved?"

Dr. Luben stressed that we know more than we knew before and we need continuing high quality research. "We certainly don't yet know enough about the possible effects of EMF on cancer to dismiss the possibility of a hazard," he emphasized.

When I asked if he knew of the work of Dr. William Rea, whose anecdote we used to open this article, he said he did not. Perhaps he and Dr. Rea should put their heads together. Dr. Rea conducted "preliminary" studies published in the *Journal of Bioelectricity* in 1991 that, unless you are forced to use scientific weasel wording, proved that low level EMF effects human bodies.

Dr. Rea is noted for his clinical work with "universal reactors," which are individuals who have "allergies" to virtually everything in the environment. We've all read stories about people who needed to live in a glass tent, so to speak, in order to live at all.

What makes one person more sensitive to things than others? Individual differences are so vast that there will never be a simple answer to that question. However, and this is basic, if something in the environment affects a sensitive person, it also must penetrate and influence insensitive people who simply don't react or feel it in any noticeable way.

For example, the toxic mercury vapors escaping from dental fillings are undoubtedly damaging to all living cells but there are people who have lived virtual lifetimes with such fillings and never reacted with any serious overt symptoms even though the mercury is having its effects.

As we pointed out in the other major feature in *d-lis* newsletter, Dr. Hal Huggins showed the various effects of dental mercury on the subjects and also how each of them may have physiologically coped with the same poison in many different ways.

EMF, especially, reaches everyone in the environment. So it must penetrate all body systems in the same fashion. However, strong systems will react differently than weak systems. Over time and combined with other toxins, pollution and stress, the EMF could generate sensitivity that was not around earlier. For example, as a young man weather changes never phased me; now that I'm in my 60's, my body is quite sensitive to ionic changes in weather fronts.

The point is, just because this research was done on very sensitive patients rather than on healthy people, do not get the idea that it isn't relevant to you and your family.

In the study, Dr. Rea and his coworkers first created a controlled environment very low in particulate, chemical and EMF pollution. Monitoring devices were used to insure that

no extraneous EMF was allowed to penetrate the tests. Then 100 patients complaining of EMF sensitivity were challenged in a blind experiment which resulted in isolating 25 individuals who were truly sensitive to the low fields but did not respond to the blanks. Then, 25 "naive" and healthy controls were selected. The 25 test patients and the 25 controls were challenged by EMF fields and/or blanks. None of the naive volunteers responded to EMF challenges. However, 16 of the sensitive group responded with positive signs and symptoms as well as autonomic nervous system changes.

Finally, to double-check the results, the 16 sensitive patients were rechallenged twice to the frequencies to which they were most sensitive during the initial challenge. The active frequency was positive in 100% of the cases, while all the placebo tests were negative.

"We concluded," the report stated, "that this study gives strong evidence that electromagnetic field sensitivity exists, and can be elicited under environmentally controlled conditions."

Once again we see equivocation that is typical of scientists. In this case the hedging seems silly. These experiments proved EMF can affect living human bodies.

Since these tests were conducted on living humans the variables were difficult to control, but Rea and associates managed to do so very well. Of

course the results will not be considered scientifically proved until reproduced by another peer group in other labs. Because Dr. Rea has so much clinical experience with severely sensitive people, his test design was superlative. The complete report is too long to reproduce here, but we can repeat some of the high points for you:

"Before the EMF challenge, blood pressure, pulse rate, respiratory rate, temperature, sign and symptom scores, and autonomic nervous system functions were tested. The autonomic nervous system function was tested with a binocular iriscorder (Model C2515, Hamamatsu Photonics), which measured pupil area, time at which constriction and dilation occurred, and rate of constriction/dilation."

(The important eye measurements were taken on both the controls and the test group, of course, and provided the study with clear cut evidence.)

"All patients had been previously evaluated and treated for biological inhalant, food and chemical sensitivities in order to minimize possible confusion from coexisting problems. The patients were stabilized on a healthy diet in a constant low-pollution environment. In addition, they had their overall body load reduced and stabilized in a controlled environment."

The screening was very tough. Although 75 patients

were excluded from the test for various reasons, 50 of them showed positive responses to EMF challenges, but also reacted to blanks on occasion; the study group tried to leave very little to chance or other variables, so only the consistently responsive 25 were ultimately selected. Of that group only 16 were finalists and hence rechallenged to make sure.

Because of his years of pioneering clinical experience with ultra-sensitive patients, the discussion part of Dr. Rea's report is surely extra-worthy of repeating:

"When one compares the various groups to controls, it is clear that there is a group of patients who have unstable response systems which appear different from those of the individuals who acted as controls. These studies show that EMF sensitivity could be elicited under environmentally controlled conditions. As a result of the weak field levels and short exposure time, the responses were mild except in two patients whose symptoms were so severe--drop attack, severe itching--that they received intravenous vitamin C, magnesium and oxygen as a result of the prolonged and delayed reactions.

"Signs and symptoms appeared similar to those seen in food or chemically sensitive patients at the Environmental Health Center in Dallas, and included neurological, musculoskeletal, cardiovascular,

respirator, gastrointestinal, dermal and ocular changes. Neurological symptoms were the most common. Similar responses have been recorded by others in the literature. In 1972, after the Soviets reported that electrical utility workers were suffering from listlessness, fatigue, and nausea (investigators) reported decisive changes in cardiac function and bioamine levels when pulses of 0.01 and 0.1 Hz were used. They found significant changes in the hypothalamus in response to the EMF fields...

"In our experience, the patients' clinical responses could not always be reproduced completely, but the objective iriscorder, EKG and respirometer could be. However, the (clinical) responses were definitively different from controls or placebo challenges. In our experience over the years, we have found partial reproduction of symptoms on repeat challenge to be as significant as total reproduction. Therefore, significant differences from controls in objective measurements were deemed valid.

"There are several explanations for lack of exact reproducibility. These are: a) the patients' total body loads were different and different exposure periods. For example, some patients may only respond to EMF when in a reactive hypersensitive state; b) tissue resistance could influence the effect of the EMF...c) injections of antigen

neutralizing substances prior to test may have reduced the response to EMF. One patient with asthma was sensitive to high voltage power lines as well as low voltage house wiring. He experienced muscle spasms in head, neck, arms and legs. This patient was also sensitive to dust, weeds, dust mites, and some foods. He reacted in our tests to (specific frequencies) with tightness in the chest. He then received an antigen shot to neutralize his hypersensitivity reactions. Five months later, he was unreactive to EMF; d) weather changes might effect the results, since we know that the weather can influence the propagation of EMF, as may alterations in the geomagnetic fields. Since humidity, pollution, temperature, etc. can effect resistance and total body load, weather should perhaps affect the results. Adverse weather, inversions for example, may increase pollution load, while good weather lessens it. There is some evidence of resonance between geomagnetic fields and an applied ac magnetic field, which implies that the results may depend in part at least upon the strength and orientation of the geomagnetic field in the test area; and e) different wave forms might cause different responses. In these experiments, we used only square wave inputs to the coils. Consequently, we do not know whether other wave forms (sine, sawtooth, triangular etc.) might induce different

types or intensities of reactions."

Dr. Rea, writing in 1991, presaged the results of Dr. Luden's research. He wrote: "Thus far, definitive information has not been sufficient to identify a plausible mechanism for EMF interactions with biological tissue. Interactions appear to take place at the cell surface, perhaps acting on receptor sites and altering ion and molecular transport across the membranes..."

So, we can plainly see that EMF sensitivity exists in humans. For people who happen to be ultra-sensitive the EMF clearly cannot be given a "clean bill of health." The agenda of officialdom in this matter must be set aside in the interests of truth and optimal health.

What makes a person "sensitive" or "receptive" to certain influences of low level EMF? What makes one person allergic and another one not allergic to the same things? Obviously the difference lies in the strength, stamina and health of the body as it encounters these pervasive elements of pollution.

Today's general diet and lifestyle are obviously more conducive to hypersensitivity than they are to robust protective responses. The numbers of people with chronic disease conditions, including asthma and allergies, has risen at a startling rate in the past few decades. There are many, many reasons for the growing num-

bers of "sensitive" and "allergic" individuals.

At a seminar we attended in Minneapolis a few years ago, Dr. Rea pointed out that the sensitive patients were deficient in the B-vitamins. The general deficiency of B-vitamins in modern Americans has been pointed up by various studies, including those on folic acid deficiency and birth defects. The B-vitamin complex has been hit hard by highly refined foods and depleted soils. Our experience tells us that supplementing one's diet with a quality B-complex, such as our Micro B Complex, goes a long, long way toward improving robust, healthy responses to challenges in the environment.

It is known that cells require adequate calcium to be strong, robust and healthy. While it seems that our modern diet is awash in calcium, and calcium supplements abound, the general population shows signs of calcium deficiency. This is because modern refined foods and lifestyle contribute to a failure to properly metabolize and utilize calcium in a useful form. Foods are "fortified" and people are "supplementing" with calcium because of the widespread osteoporosis in our society, but it's apparently not supplying the metabolic needs. We have learned that a little calcium in the right package-carried to the cells by the important aspartic acid and EAP chelates-provides the

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# More Reasons to Refuse Melatonin

We do not consider the hormone melatonin to be a nutrient. Hormones are biochemicals made by the body for use by the body at specific times and places. Quality nutrients are needed by the body to make melatonin and other hormones, but it makes no sense to take hormones as a supplement. When doctors prescribe hormones, they are prescribing a drug, not a nutrient.

In the past we have pointed out the following about melatonin:

Mice and humans do not have similar biological clocks, mice are generally nocturnal creatures, so melatonin

studies with these rodents likely do not relate to humans at all. Melatonin has shown no activity against cancer in human beings, and the test tube studies at this time are meaningless according to the top experts in the field. In fact, the evidence claiming that melatonin is an important antioxidant is overstated. It cannot compare with vitamin C or vitamin E. As for claims that melatonin enhances sex for humans, take it with a grain of salt since some studies show that melatonin inhibits sexual activity in animals, unless those studies are also unrelated to humans.

Despite the above facts, melatonin is still being hyped

as a "miracle" to the masses of Americans who don't normally have the means nor the experience to check on such claims. Therefore, we must remain vigilant.

Now, in the article on EMF in this issue of *True Health* you will note the reference to melatonin, EMF and breast cancer made by Dr. Richard Luben (page 15) when he was summing up Dr. Liburdy's important experiments with breast cancer cells that were later replicated in Luben's lab.

Cancer cell growth was *stimulated* by the presence of melatonin. And in the presence of both melatonin and EMF cancer cell growth was stimulated even more. That tiny amount of electromagnetic field energy (12 millegauss) made a significant difference in cancer cell growth.

Since we are on the subject of melatonin, there was a study on melatonin and sleep published in a letter to *Lancet* last August 24 where it was learned that two out of 10 subjects and later 2 out of six subjects in the sleep experiment sustained unexpected fragmented or broken sleep patterns, which are very unhealthy.

The scientists from the University of Surrey, UK, in trying to understand the disturbing side effect wrote:

"There is good evidence in animals, and in human

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EMF..continued from page 18

genuine health benefits befitting a dietary supplement.

Another key, but overlooked factor is the amazing anti-fat frenzy that engulfed Americans over the last 30 years. High quality fat from clean meats and organically produced eggs and dairy products has traditionally provided humans with optimal nutrition for insulating and protecting the bodies. Not only is fat used as a "cushion" by our bodies as we battle the force of gravity every day, but robust cellular metabolism is impossible without high quality fat in the diet. Dr. Mary Enig has courageously stood out against the agenda-driven,

salad oil sponsored science to point out that ~~we~~ especially need saturated short and medium chain fats (those maligned animal fats) in our diet. We also need essential fatty acids, but in higher quality and lesser amounts than our hydrogenated salad oil supermarket culture is providing. Today's anti-fat, anti-cholesterol frenzy has caused dietary overload of questionable polyunsaturated oils and unnatural trans fatty acids.

At *True Health* we will continue to watch the EMF controversy and sift through the equivocation and agenda-driven materials in order to give you cleaner food for thought.

