



**The UGLY SECRET:
The EMF Epidemiology Studies are Misleading Us**
by Roy Beavers, the EMF Guru

The following is a shortened and revised version of Mr. Beavers paper "San Antonio meeting report" and "Blue World" revisited, which appears on The EMF(guru) web-page on the internet at: (update link?)

<http://www.feb.se/EMF-L/EMFL-1-98.html>

This report is being prepared immediately following my return from the San Antonio (Jan 12-14, 1998) meeting of the EMF RAPID review process, which is being managed and conducted by the National Institute of Environmental Health Sciences (NIEHS). So far, they are doing a good job of conducting an open and unbiased review process which is not "tilted" to protect industry interests at the expense of the public.

But, "The proof," as they say, "is in the pudding." The distortions of truth (which have occurred so frequently in the past in this EMF saga) RARELY occur at the working level. The dishonesties begin to appear when the work of the (by and large) dedicated, objective and conscientious "working" scientists is passed up "the chain of command" to their bosses higher in the

Now, do you see the problem that is being presented to the epidemiologists in EMF research? EMF in our environment is so widespread ("ubiquitous" is the word currently being used) in our modern industrial electrified western societies that it is becoming more and more difficult to find control groups which have not been exposed! Or have been only minimally exposed!

The result is a tendency for the EMF study comparisons to "level out" at or near the 1 to 1 ratio. Clearly, there exists in such studies a built-in "bias" _against_ obtaining results that would show the true adverse health effect of the EMF exposure.

-- From this document

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The _scientific_ truth is that this EMF health threat is substantially greater than "second hand smoke" (O.R. 1.2 to 1.5), for example, though that is the kind of comparison that is often made by industry spokesmen or their "friends" in the scientific community.....

Still, look at what the U.S. government has been

"the chain of command" to their bosses higher in the bureaucracy. It is there that political and economic (read "profits") considerations begin to distort the true science which began at the bottom (not always, but too often!!!).

Anyway, my present belief is that the people I see at these meetings (I attend ALL of them.) WANT to do their "dead-level" best to honorably complete this task in keeping with the highest possible science traditions and standards. If they fail in that ... I WILL TELL YOU..... THE PUBLIC HAS A RIGHT TO KNOW.....

Where We Are (After San Antonio)

I have long since learned that all who have an EMF problem of some sort are convinced that "their" problem is the most serious and the most threatening to humanity. If they live in a neighborhood or community that is about to be deluged with cellular telephone antennas, they believe the cell-phone is the worst of all EMF contingencies. If they have a friend or relative (or particularly "they" themselves) carrying the burden of breast cancer, then of course that is the worst hazard. (As you will see below, we may soon be including the male gender in this tragic "reproductive hormone" picture -- prostate cancer is also now suspect.) Much the same can be said of brain cancer or Alzheimer's or ALS or Parkinson's, the brain neuron conditions which may be showing the strongest EMF associations of all.

If the EMF victim lives near power "transmission" or even "distribution" lines, then it is the power company that becomes the target of condemnation, as childhood leukemia is consistently showing-up there more frequently than it should. The O.R. (odds ratio) for childhood leukemia is also consistently low, but I believe there is an explanation for that which is NOT reassuring. (More will be said below on the "ugly secret" low O.R. issue.)

In fact, it now seems quite possible that ALL of the above adverse health conditions are possible as a result of EMF exposure -- and more! In the end, it may not be easy to say which is the most adverse EMF/health situation because it appears more and more likely that: (a) EMF exposure from whatever source can be cell damaging (thus health threatening), if sufficient in strength and duration ... probably through the process of promoting or allowing the buildup of free radicals which damage human cells, and (b) it does not appear that the frequency (wavelength, ELF or RF, etc.) of the exposure is "defining" -- though, until we know more, it is perhaps alright to say: some frequencies "may" have a greater propensity for the induction of cell and tissue damage than others.

Most important of all, the exposure "strength" required to cause the suspect illnesses cited above is now clearly conceded to be in the ranges of those exposure conditions which are -- at least in certain situations -- occurring in our home and work environment. The picture that is emerging is one of potentially _broad overall health impact_ -- not just childhood leukemia or breast cancer or brain cancer. It is a picture of EXPOSURE and EFFECT that is so broad -- and so "buried" within the historical process of worldwide electrification that has occurred over the past 100 years -- that it could easily have been missed for many more years had not a few prescient observers (like Robert Becker or Nancy Wertheimer) spoken out

Still, look at what the U.S. government has been willing to do about second hand smoke!! Yet many, many more people are being affected by EMF exposure than second hand smoke! The EMF RAPID report, when it is finally prepared upon the completion of these symposia meetings ... should lay to rest this "low risk factor" myth once and for all.....

At San Antonio, I asked a group of about ten epidemiologists specifically about this aspect. I got no answer. No denial. No argument. Every scientist who is working on this issue -- certainly every epidemiologist -- knows that this ugly reality is not being explained to the public. Why? Because it literally DESTROYS the argument that EMF is a minor problem!!!!

The Blue World

EMF is no minor problem.... It is a major problem.... And it is not getting any better. It is getting worse, fast ... as that "frenzy" of electrical/electronic technological advances and commercial sales to the public (not to mention governmental and military activity) -- which was first cited in my "Blue World" essay -- charges onward under the watchful eye of an indifferent government that is consciously determined to be oblivious to the long term health consequences for ALL of mankind.....

The "vested interests" (telecommunications and electrical industry) have about given up on their denial that these biological interactions are occurring. "But," they argue, "that doesn't prove that adverse health consequences are the result."

To argue that these (now many, many documented) interactions CAN NOT lead to health problems of the suspected nature (leukemia, cancer, Alzheimer's, nervous system disorders, etc.) really requires that they argue against mathematical probabilities.... ALL of this biological activity, they must argue, is harmless???. And, they must argue that it is harmless ... IN SPITE OF the epidemiological evidence which shows, in effect, the end result damage in the form of cancer, etc.

There are not many of the serious and knowledgeable scientists -- looking at this research -- who "buy" that argument anymore....

BUT ... the government's vested interest in this matter is almost as great as the industries!!!! Between them, they have so far succeeded in keeping much of this info from the public. What info HAS gotten to the public has been successfully obfuscated by claims like, "but this hasn't been 'proved' yet," etc. ...or..."There is much disagreement within the scientific community, etc." By implication, the public should ignore the "weight of the evidence" until there is "overwhelming" agreement or "consensus."

With industry able to "hire" and "influence" the scientific judgments to the very great extent that they can, and with industry's 'advertising and political' ("ownership" in the U.S.) control over the public information media ... the kind of "consensus" industry says we should wait for ... will never occur!!! IT IS, INDEED, VERY MUCH LIKE THE TOBACCO CASE, twenty or thirty years ago!!!! (Only, I submit, it is worse!!!)

(like Robert Becker or Nancy Wertheimer) spoken out forcefully ... and in spite of the condemnation that was heaped upon them by an "establishment" medical and science community which "did not see the forest for the trees."

EMF researchers, who have been reporting the results of their research efforts to their colleagues at the recent NIEHS-sponsored symposia (at Durham in March of 1997 and most recently at San Antonio in January of 1998), are also saying that EMF induced biological damage is (1) probably cumulative, and (2) is subject to the natural cell "healing" processes which can work to overcome much of the free radical damage.

Biological Activity is the Key

The amount of biological activity is the key. Without doubt, the amount of free radical (potentially cell damaging) biological activity that is being induced within the human race by EMF exposure of all kinds and frequencies ... has been multiplied on the order of a few 'thousand-fold' to a few 'million-fold' since the introduction of electricity into our lives over a century ago. In the beginning, we simply did not "see" the results in terms of health consequences.

Whereas "science" once considered such "non-ionizing" radiation to be biologically benign (at least at levels of exposure than being experienced by the human population), it is now virtually certain that not ALL of it is benign! It is far more active than was previously imagined!

This brings us again to the "Blue World" scenario I described in my last message before going to San Antonio. Here, the important thing to note is that our EMF-background environment is not only an electronic "blue world" (see below) that is rapidly getting "bluer" as a result of more and more of this EMF radiation exposure worldwide ... it is also building a background "health condition" in the human population (e.g., depressed immunity and disrupted hormone systems) which make it more and more difficult to detect the effect!!!

This is an important point which requires careful attention and explanation to ensure that everyone understands it.....

The MYTH of Low Risk Factors -- The Ugly Secret

The principal method science has to track the existence and causes (or increases within the human population) of such health conditions as cancer, leukemia, etc., is that branch of medical science known as 'epidemiology.' In its simplest form, epidemiology compares "groups" of the population which have been exposed (to a suspected health-damaging cause or "risk") to other groups that have not been exposed (called "the control group"). The result of this comparison provides the "O.R." the observed risk factor or "odds ratio."

An O.R. of 1.0 means that the groups which were compared resulted in "no observable difference." The incidence of the illness, in other words, was 1 to 1. Neither group showed any higher propensity to contract the disease. If, on the other hand, the 'exposed' group showed 50% more incidence of the illness than the 'unexposed' control group, then the

worse!!!)

It should be evident to most objective readers, the issue is certainly NOT ... what we now can say has been "proved." The issue is: what is the WEIGHT of the evidence telling us?????

Though the vested interests (both industry and the government) may try to force a decision on the EMF issue based on some kind of "what we have 'conclusively' proved" criterion, the "weight of the evidence" is clearly the best way to decide this issue -- at this time -- if one is genuinely putting PUBLIC HEALTH at highest priority ... where it should be!!!

I even heard (at San Antonio) some of the "science community" using that "weight of the evidence" expression. As one "old hand" said: most scientific questions initially "have" to be resolved on a "weight of the evidence" basis.

There is very little in science, today, that has been "conclusively proved" -- in the manner "assumed" by industry (and by the 1996 NAS- National Academy of Science EMF study which attempted to wholly 'exonerate' the EMF threat.)

The weight of the evidence is telling us that we have a really BIG problem ... and that it is getting bigger ... faster ... as we actually are "saturating" our environment in a "technological/sales frenzy" -- of cell phones (and their 140,000 retransmission antennas), space-based satellites, power lines, TV transmitters, not to mention all the electronics now in our homes and businesses, etc. [And P.S., there are some new military projects which dwarf past exposure levels. The military of all nations has ALWAYS been a major source of EMF pollution.]

This frenzied growth in EMF exposure, which has no comparable historic parallel in terms of worldwide pollution, is giving us an "electronic smog" at more and more frequencies of the EMR spectrum ... and at higher and higher levels of transmission energy..... If this "stuff" would just emit a light blue "glow," we would all see that we are now living in a deep blue world!!!! And it is rapidly getting bluer.... And, contrary to about one-hundred years of scientific "assumptions," it IS biologically active!!!! And at least SOME of that biological activity is harmful to our health.....

Industry (and the government???) want us to wait until we have determined what are the parameters of "health-affecting" and "non-health-affecting" exposure? They want us to wait until we can show "how" the damage is being done?? Worst of all, they want us to show that the human "cost" of NOT dealing with this problem is "worth" the economic "cost" that will be incurred in dealing with it??? (That's the old, "if you install safety measures in the mine you will drive up the cost of coal"... argument.) In short, they want us to wait until virtually all the details have been "filled in" before we try to do anything about this (now virtually certain) health menace.....

In 1985, Dr. Robert O Becker, M.D., published his (now) classic study: THE BODY ELECTRIC, Electromagnetism and the Foundation of Life..... ISBN --0-688-06971-1.

illness than the 'unexposed' control group, then the O.R. factor would be described as "1.5," meaning that the exposed group was 50% more likely to contract the illness; and therefore it could be inferred that the "risk" exposure being compared was a causative or contributing factor to the illness in some way. An O.R. of 1.5, however, is not considered to be a very "strong" association. If an O.R. of 2.0 or 3.0 were found in the comparison then it could be inferred that the "strength" of that causative or contributing risk was stronger (than in the 1.5 case).

From the above "basic" explanation, it should be obvious that the epidemiologist conducting the study needs at least two conditions if he/she is going to produce a valid study:

(1) The composition of the two groups being compared should be as nearly similar as possible. Ideally, in fact, the researcher wants the two groups to be out of the same population, the same socio-economic population, the same racial background (because of possible genetic confounders) and/or the same neighborhood population. In short, the goal is to "match" the two groups as perfectly as possible in every respect except one!!!

(2) The researcher does NOT want his two groups to have been exposed to the same risk (or the same 'amount' of risk) that is being measured in the comparison. When comparing two groups in the case of tobacco exposure, for example, the researcher wants his control group to be a group of non-smokers (or as much so as he can find) which he will then compare to a group of smokers to determine the O.R. of whatever health condition is being studied (e.g., lung cancer).

If this contrast between "exposed" and "non-exposed" cannot be based upon two groups that have genuinely different levels of exposure (though otherwise similar and of the same "population"), the O.R. obviously will tend to "level out" in the direction of 1 to 1..... No contrast (or very little contrast) will be observable!!!!

Now, do you see the problem that is being presented to the epidemiologists in EMF research? EMF in our environment is so widespread ("ubiquitous" is the word currently being used) in our modern industrial electrified western societies that it is becoming more and more difficult to find control groups which have not been exposed! Or have been only minimally exposed!

The result is a tendency for the EMF study comparisons to "level out" at or near the 1 to 1 ratio. Clearly, there exists in such studies a built-in "bias" against obtaining results that would show the true adverse health effect of the EMF exposure. Much of the 'real' effect is being lost in the "leveling out" that occurs when 'exposed' groups are in fact being compared to so-called "non-exposed" groups ... but which, in fact, have been exposed (perhaps substantially), though we really cannot tell how much???

That is the "ugly secret" that is not being reported in the EMF epidemiology studies: The public is not being told about the many epidemiological study results that 'bias' the outcome in the direction of low odds-ratios (on the order of 1.5 to 2.5) -- even though the "real world" of 'mother nature' could be causing health damage that would justify much higher O.R.

On page 275 of the most recent edition, you will find:

"The human species has changed its electromagnetic background more than any other aspect of the environment. For example, the density of radio waves around us is now 100 million or 200 million times the natural level reaching us from the sun. Nor is there any end in sight. When superconducting cables are introduced, they'll increase the field strength around power lines by a factor of ten or twenty ..."

[Written in 1985. We now have the "super-conductors." -- guru]

"A few years ago most investigators believed that each wavelength ["frequency"] interacted mainly with objects comparable to it in size. This was a comforting notion that theoretically limited each frequency to one type of effect and predicted that really troublesome problems for humans would come from only one portion of the spectrum -- the FM band. Now, however, we know there are primary effects on all life forms at ELF frequencies, and in other parts of the spectrum there can be consequences for specific systems at 'any' level, from the subatomic to the entire biosphere as a unit ... There's often no direct relationship between dose and effect, however; a low power density sometimes does things that a higher one does not ... In a sense, the entire population of the world is willy-nilly the subject of a giant experiment....."

Dr. Becker is an M.D. who got "lost" and became a scientist, in the truest sense of the word. He pursued the truth even when it led to major confrontation with the "establishment" (medical, scientific or political). He was eventually "pushed out" of the research community. I believe he is now living in retirement in New York.

When the final chapter of the EMF saga is written, Robert Becker's contribution will loom as large as any. I have previously stated that I see this subject as the most important science event since $E = mc^2$. It is that because of the really 'huge' window of knowledge (and, hopefully, understanding) it opens into the vistas both of physics and biology -- and the 'relationship' of the two. Before Robert Becker, only the Russians (in "modern" times) had peered thru that window.

If you get hold of his book be sure you read about the 'Soviet' activities in EMF at least two decades before U.S. science even acknowledged its existence. As he tells you, they used that knowledge to direct a campaign of EMF signals against the employees of the U.S Embassy in Moscow. Two Ambassadors died of cancer, perhaps as a consequence of this Soviet EMF activity. More to the point, adverse health effects were also documented with regard to other employees as

health damage that would justify _much higher_ O.R. results. (On the order of 2.5 to 5.0 perhaps.)

How many times have you heard that "utility spokesman" say: Oh, these "risk factors" (O.R.s) are so low that they are showing that the problem "caused by the power lines" (or TV or cell tower antennas, etc.), "is just not very great."

That statement is a myth..... It is certainly not "scientific."

also documented with regard to other employees as well. The health-effects data was "collected" (not very thoroughly) by the U.S. government, but much of that data has mysteriously disappeared.....

It is my view that Dr. Becker should be seriously considered for the Nobel Prize for his pioneering work in the EMF field, though that was admittedly a "sideline" in his ground breaking, controversial career. The EMF saga is going to be so big and so important ... that it will produce more than one Nobel winner, I am sure.....

Cheerio...
February 4,1998

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