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Attention :

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from : Ania Serrano

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RE; Docket No. 2007-OE-02- Draft Southwest National Corridor

I Lina Serrano live in Potrero, at a public town meeting I heard about the SDGE Sunrise Powerlink Project, possibly coming to the Potrero area. Where my ranch is located this project would be very detrimental to the health of my adult daughter and myself.

Due to extreme chemical and other sensitivities that my daughter and I suffered from a poisoning of aluminum and pesticides in Los Angeles, we are also sensitive to some electric magnetic fields that are too high. A power line such as the Sunrise Superlink would greatly affect our health. We moved to this ranch in Potrero because it is up high in the mountains and has clean air and environment. We are under constant medical care and my Doctor agrees this would further our disability. There are other people in Potrero who have similar health issues concerning electricity etc. I know you have other locations that could be a better choice. I am enclosing some medical information concerning High power lines and it's effects causing cancer and leukemia.

We already have a power line in Potrero, luckily this is a far distance from my ranch. The National Corridor is already a travesty. I feel that the Southwest Corridor is a bad idea and should be denied, and that alternative energy sources and conservation be used instead of a new transmission line.

Sincerely,


Lina Serrano

Serrano



**AN EVALUATION OF THE POSSIBLE RISKS FROM ELECTRIC AND
MAGNETIC FIELDS (EMFs) FROM POWER LINES, INTERNAL
WIRING, ELECTRICAL OCCUPATIONS, AND APPLIANCES**

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FINAL REPORT JUNE 2002

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EXECUTIVE SUMMARY OF THE CALIFORNIA EMF RISK EVALUATION FOR POLICYMAKERS AND THE PUBLIC

WHY AND HOW THE EVALUATION WAS DONE:

On behalf of the California Public Utilities Commission (CPUC), three scientists who work for the California Department of Health Services (DHS) were asked to review the studies about possible health problems from electric and magnetic fields (EMFs) from power lines, wiring in buildings, some jobs, and appliances. The CPUC request for review did not include radio frequency EMFs from cell phones and radio towers. Reviewer 1, Vincent DelPizzo, Ph.D., is a physicist and epidemiologist. Reviewer 2, Raymond Richard Neutra, M.D., Dr. P.H., is a physician epidemiologist, and Reviewer 3, Geraldine Lee, Ph.D., is an epidemiologist with training in genetics. All three have published original research in the EMF area and have followed the field for many years. They were assisted in their reviews by DHS toxicologists, physicians, and epidemiologists.

THE CONCLUSIONS AFTER REVIEWING ALL THE EVIDENCE:

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- To one degree or another, all three of the DHS scientists are inclined to believe that EMFs can cause some degree of increased risk of childhood leukemia, adult brain cancer, Lou Gehrig's Disease, and miscarriage.
- They strongly believe that EMFs do not increase the risk of birth defects, or low birth weight.
- They strongly believe that EMFs are not universal carcinogens, since there are a number of cancer types that are not associated with EMF exposure.
- To one degree or another they are inclined to believe that EMFs do not cause an increased risk of breast cancer, heart disease, Alzheimer's Disease, depression, or symptoms attributed by some to a sensitivity to EMFs. However,
- All three scientists had judgments that were "close to the dividing line between believing and not believing" that EMFs cause some degree of increased risk of suicide, or
- For adult leukemia, two of the scientists are "close to the dividing line between believing or not believing" and one was "prone to believe" that EMFs cause some degree of increased risk.

HOW AND WHY THE CONCLUSIONS DIFFER FROM THOSE OF OTHER RECENT REVIEWS:

While there are important differences between the three DHS reviewers' conclusions, the DHS scientists are more inclined to believe that EMF exposure increased the risk of the above health problems than the majority of the members of scientific committees convened to evaluate the scientific literature by the National Institutes of Environmental Health Sciences Working Group (NIEHS) in 1998, the International Agency for Research on Cancer (IARC) in 2001, and the British National Radiological Protection Board (NRPB) in 2001. These other committees all assessed EMFs as a "possible" carcinogen for childhood leukemia. Thus, like the DHS panel, these other three panels were not much swayed by theoretical arguments of physicists that residential EMFs were so weak as to make any biological effect impossible. NIEHS additionally assessed EMFs as a possible carcinogen for adult lymphoid leukemia and NRPB assessed a possible link with Lou Gehrig's Disease. The three DHS scientists differed in that they had a somewhat higher degree of belief that EMF is linked with these three diseases and gave credence to evidence of a link to adult brain cancer and miscarriage that the other panels either didn't consider or characterized as "inadequate." There are several reasons for these differences. The three DHS scientists thought there were reasons why animal and test tube experiments might have failed to pick up a mechanism or a health problem, hence, the absence of much

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In Rhythm with the Earth: *Electromagnetic Fields and Your Health*

By Michael R. Neuert, MA, BSME

Originally published in...

Common Ground Magazine, ©1993 Michael R. Neuert

New Life Magazine, ©1994 Michael R. Neuert

"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 an end in sight." (Dr. Robert O. Becker in "The Body Electric" 1985)

Take a moment to sit back and recall your own experience of an unexpected power outage. How did your body feel? Did you notice a sense of relief, calmness, or a release of tension? Think back to a time when you were away from electrical power for several days, like during a backpacking trip. How did you feel?

My own awareness of electromagnetic pollution began many years ago, when a major storm cut off all power in my area. Suddenly, no TV, no lights, no music from the neighbor's stereo. Even the refrigerator ceased its rumble. In an instant, my shoulders dropped, my body relaxed, my breathing deepened. Somehow, I became more "at ease." The environment seemed to become calmer, more peaceful.

What changed? What was the "irritation" I experienced when the power was on? Why did I feel better when the electricity went off?

Our Natural Electromagnetic Environment

Certain types of electromagnetic radiation are natural to our environment. For example, the sun bathes us in sunlight, energy from the "visible" portion of the electromagnetic spectrum. The earth itself is a huge

magnet, with its own electromagnetic field. Influenced by the sun, moon and cosmos, the earth's geomagnetic field fluctuates in regular rhythms - daily, monthly and yearly.

The surface of the earth and the ionosphere form a huge resonating chamber, in which the magnetic field of the planet vibrates or pulses. These pulses range in frequency from about 0.1 to 30 cycles per second. They are most concentrated at around 10 cycles per second. Let's call these natural magnetic pulsations "*the rhythm of the earth.*"

For millions of years, life on earth has existed and evolved within this relatively simple electromagnetic environment. Our eyes have evolved to "see" the visible electromagnetic radiation of the sun. Our biological cycles became tuned to the rhythms of the earth's geomagnetic field. For example, female menstruation corresponds to the field's lunar cycle.

In fact, scientists have recently discovered that our pineal gland can somehow sense the cyclic changes of the earth's magnetic field, and use this information to regulate important biological functions. The pineal gland is the master gland of the body, secreting chemicals to regulate the brain and all the other glands. For example, the pineal gland controls the secretion of melatonin - a very important hormone which affects our moods, wake/sleep patterns, and is related to the immune system.

Interestingly, when scientists measure the electromagnetic wave patterns of the human brain, they find a spectrum of frequencies nearly identical to the pulsations of the earth's

magnetic field! In fact, the dominant brain wave frequency for humans and all animals on earth is 10 cycles per second - *the rhythm of the earth!* A mere coincidence?

Brain waves at 10 cycles per second correspond to a calm, relaxed state of mind (called alpha waves). During sleep, the brain's waves become slower (delta and theta waves). The fastest waves occur when the mind is most actively engaged, ranging up to about 20 to 30 cycles per second (beta waves).

In the United States, electric power lines, transformers, building wiring, lights, clocks, appliances, motors, TVs, stereos, computers - almost everything electrical or electronic in our modern world - all emit *artificial* electromagnetic fields at a frequency of 60 cycles per second or higher. Military, communication, and other electronic systems emit EMFs over an immense range of frequencies greater than 60 cycles per second, rarely encountered on earth before the 1900s.

Now, if the 10 cycles per second pulsations of our *natural* electromagnetic environment correspond to a calm and relaxed state of mind - and if 20 to 30 cycles correspond to the highest frequencies for a very busy mind - how might we experience an environment filled with *artificial* fields vibrating at 60 cycles and more? Would we find it harder to relax? Would our bodies experience more tension and stress? Would our biological functions be altered? Would our ability to resist "*dis-ease*" be affected?

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Known Bio-Effects of EMFs

Studies on mice, rats, monkeys, swine and other animals link EMFs to changes in blood chemistry, cell growth, brain function, and hormone production, as well as increased biological stress, tumor production, miscarriage and birth defects.

Studies show that EMFs can suppress the pineal gland's secretion of melatonin. Melatonin plays a critical cancer role by increasing the effectiveness of the body's natural killer lymphocytes, thus inhibiting tumor growth. Suppression of pineal gland function has been implicated in the etiology of breast, ovarian, prostate and melanoma cancers. Depressed melatonin levels are also associated with depression, mood changes and psychiatric disorders.

EMFs also cause important changes at the cellular level. Studies show that EMFs can alter the flow of calcium ions across the cell membrane. This affects the proper regulation of cell growth, leading to changes in cell reproduction similar to tumor growth. In laboratory tests, human cancer cells have grown up to 16 times faster, and become more malignant, when exposed to EMFs.

Repeated studies have found that children living in homes with high EMFs from power lines die of leukemia, lymph node cancer and/or nervous system tumors at twice, triple, and sometimes four times the normal rate. For adults, over 30 epidemiological studies have linked high EMF occupations to increased leukemia, lymphoma, melanoma, and/or central nervous system cancers.

A study of 1600 pregnancies by Kaiser Permanente found that women who worked more than 20 hours per week at a computer VDT (Video Display Terminal) had 73% more miscarriages than similar women who did not. Increased cancer, miscarriage and/or birth defects have been linked to the use of electric blankets, waterbeds, hair dryers, black & white televisions, and computers.

So, what should you do? Throw out your electrical appliances? Disconnect your home from the local electric utility. Move to a more remote location?

EMF Reduction

Fortunately, there is much that you can do to reduce your exposure. Since it is difficult to predict exposure levels, EMFs must be measured directly with appropriate instruments. To begin, obtain a gaussmeter (or hire a professional tester) to measure the actual EMF levels in your home, your office, your school, around TVs and computers, and in any other locations where you and your family spend significant amounts of time.

Relocate beds, desks, tables, sofas, play areas and bedrooms to the safest locations. Avoid areas with the highest readings. Be aware that magnetic fields are not stopped by walls and partitions, and distance yourself as much as possible from any obvious electrical sources. Don't stand mesmerized in front of the microwave oven.

Move cords, clocks and radios away from where you sleep at night. Use an electric blanket only to pre-heat the bed, and then unplug it. If you sleep on a water bed, use a low-EMF type heater, located as far from your body as possible. Better yet, insulate the water bag and unplug the heater at night.

Computers and televisions are a special concern. Not only do they emit EMFs similar to power lines, the fields are more irregular and mixed with other radiations (including VLF magnetic and electric fields, radio waves, microwaves, infrared waves, ultraviolet radiation, and possibly X-rays.) I recommend that computers and TVs be tested periodically for ELF magnetic fields, VLF magnetic fields, electric fields, and soft X-rays. Certain shields and screens can be installed in and around your monitor to reduce the EMFs. The best way to minimize computer radiation is to sit as far back

as possible, and use a specially designed low-radiation monitor.

Repeated studies have found significant increases in childhood cancer for chronic exposures of 3.0 to 4.0 milligauss, and recently as low as 2.0 milligauss. To provide a margin of safety, we generally try to reduce long-term exposures to 0.5 milligauss or less. However, there is no guarantee that 0.5 milligauss - or any level - is completely safe. Therefore it may be wise to reduce any exposures as much as reasonably possible.

If you find that large areas of your home or office measure above 0.5 milligauss, you may want to get professional help to locate and perhaps correct the sources of these exposures. High EMF conditions can be caused by a variety of electrical wiring, grounding, plumbing and appliance conditions, many of which are corrected easily. In some cases, even power line exposures can be reduced.

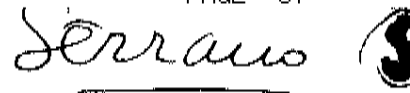
Perhaps most important, you can test for EMFs before you purchase a new home, or rent an apartment. Also, if you plan ahead, you can incorporate special low-EMF electrical wiring techniques and materials into your new or remodel construction project, at little additional cost.

By minimizing the electromagnetic pollution you experience daily, you can promote the natural health and well-being of your body, and live more... *in rhythm with the earth!*

For further information, a free EMF booklet and catalog is available from the author. Call toll free: 1-800-638-3781.

Michael R. Neuert holds a BS degree in Mechanical Engineering, and an MA in Psychology. He has extensive experience in the testing and reduction of EMFs, and in the development of low-EMF consumer products.

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Background Information About EMFs

Electromagnetic Fields (EMFs) are a type of electromagnetic radiation commonly emitted from everything electrical in our modern world – power lines, transformers, electrical panels, building wiring, appliances, lighting, computers, telephones, cell phones and even automobile engines.

Common Sources of EMFs – Because of the extent and close proximity of electrical wiring in modern buildings, the typical person receives more EMFs from ***electrical wiring*** than any other source. The number two source is usually from ***appliances, telephones, TVs and computers***. The third largest exposure is often from ***power lines***. The fourth largest is usually from automobiles, cell phones and towers, etc.

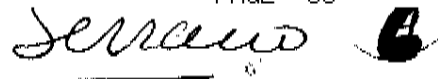
ELF Electromagnetic Fields – Most of the EMFs found in the home or office will be in the extremely-low-frequency or ***ELF*** range of the electromagnetic spectrum. This includes the 60 hertz EMFs emitted from power lines, electrical wiring and most lights and appliances. At these ***ELF*** frequencies, the EMFs contain two separate and distinct parts – one part is called the ***magnetic field*** and the other is called the ***electric field***.

Magnetic fields can be detected with a gaussmeter, and are measured in units of strength called “***milligauss***” (***mG***). Magnetic fields are caused by the flow of electrical current, and they are the EMF component most often linked to serious health effects in the scientific literature – including leukemia, lymphoma, brain cancer, breast cancer, ALS, Alzheimer’s Disease, immune suppression, depression, and suicide.

Electric fields are caused by the presence of electrical voltage, and are linked to various biological effects in the scientific literature. Electric fields are detected by measuring the actual voltage induced onto the skin, using a standard voltmeter. Anecdotal evidence suggests that electric fields may be linked to complaints including fatigue, headache, anxiety, dizziness, irritability, mental confusion, nausea, burning or tingling sensations, and sleep problems.

Electrical Sensitivity (ES) is a common term for the condition where an individual exhibits negative reactions or hypersensitivity to electrical or electronic sources. Although ***ES*** is not yet well understood medically, it is **easily confirmed** when a person can experience relief of symptoms simply by turning off or getting away from the electrical sources. (Also called Electrosensitivity, Electrical Hypersensitivity, Electromagnetic Sensitivity, or Electromagnetic Hypersensitivity.)

Prudent Avoidance -- At present, there is much controversy regarding the potential health effects, if any, from human exposure to EMFs. While there are few official guidelines to limit exposure, many authorities recommend a precautionary approach called prudent avoidance: ***reducing exposures to EMFs whenever possible without great additional cost.***



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Background Information about Electrical Sensitivity

While hundreds of research studies have documented a variety of biological effects due to EMFs, the potential health concerns are generally not well recognized by the medical community. I have worked with many who have reported serious symptoms and sensitivities to EMFs. The following information is presented from my own professional experience, and therefore is anecdotal at best. Please search for other up-to-date research information and inquire with other health care professionals for further assistance.

(1) **Definition:** It is rather simple to define Electrical Sensitivity (ES). Basically, it is assumed that if the symptoms can be relieved by simply turning off or getting away from certain electrical sources, then the individual is sensitive to electromagnetic fields.

(2) **Safe Location:** Unfortunately, it can be difficult to find a safe location with few electrical sources and low exposures, because there is so much electromagnetic pollution today. In extreme cases, some individuals have moved to a more rural location and lived with little or no electricity for a while. In other cases, the wiring, lights and appliances have been shielded, or turned off to reduce the levels adequately.

(3) **Sensitivity Varies:** One individual may be very sensitive to electric fields, while another person may have problems with magnetic fields, and yet another may be affected by both. It is always an individual matter. I usually assume that most people are sensitive to both, and thus need to reduce their exposure to magnetic *and* electric fields. (Some people appear to be sensitive to high frequency RF/microwave radiation as well.)

(4) **Magnetic Fields:** People can be sensitive at very, very low exposure levels. A typical ES client of mine might have symptoms with magnetic fields at only 0.2 or 0.3 milligauss. Since the "average" house is usually around 0.5 to 1.0 milligauss or more, an individual may need to reduce their home to much less than the "typical" level.

(5) **Electric Fields:** When people are sensitive to electric fields, they often need to reduce their exposure to less than 0.1 Volt AC (skin voltage) to relieve their symptoms. So again, they may need to reduce their exposure to much less than the "average" home, which is usually between 0.5 to 3.0 Volts AC. Again, this is an individual matter.

(6) **General Advice:** My usual advice is to reduce all EMF exposures as much as possible, with special emphasis on the bedroom. Sleep time is the recovery period for the body and the most important time for the immune system. Studies suggest that EMFs may reduce the natural secretion of melatonin at night. Lowered melatonin has been linked to suppression of immune function, increased risk for several cancers, and also depression and psychological disorders.

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Norwegian and Danish Studies Also Point to Cancer Risk

Two other Scandinavian epidemiological studies—one on Norwegian workers and one on Danish children—also point to an EMF—cancer risk.

Drs. Tore Tynes, Aage Andersen and Freydis Langmark of the Cancer Registry of Norway in Oslo report that male electrical workers with a "long duration of employment" had a statistically significant 40% increase in acute and chronic leukemia. The highest risks were among radio and TV repairmen, radio and telegraph operators and power line workers.

The results, which were based on an investigation of approximately 38,000 workers, appear in the July 1 issue of the *American Journal of Epidemiology* (136, pp.81-88, 1992). The researchers did not see an increased risk of brain tumors. Tynes and Andersen previously reported that this group of workers had an abnormally high rate of breast cancer (see *MWN*, 3/F91).

And on October 7, as we went to press, Dr. Jørgen Olsen of the Danish Cancer Registry in Copenhagen announced that children living near high voltage power lines with magnetic field exposures of 1 mG or more had a statistically significant fivefold elevated risk of lymphoma, as compared with controls. Although no excess risk of leukemia or brain tumors was observed, the combined risk for these three types of childhood cancer was more than five-and-a-half times greater for exposures of 4 mG or more, as compared with controls.