

**D0227**

4/11/08

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To: CPUC/BLM  
c/o Aspen Environmental Group  
235 Montgomery St., Suite 935  
San Francisco, Ca. 94104

From: Lina W. Serrano  
"Boulder Oaks Ranch"  
25322 Potrero Valley Road  
Potrero, Ca. 91963

Attention: CPUC/BLM,

I Lina W. Serrano and my adult daughter Caren C. Serrano, live in Potrero and strongly oppose the SDGE "power Link" modified route D. This proposed transmission line called "The Sunrise Power Link" would gravely impact the communities of Potrero, Barrett, Dulzura, Campo, and Boulevard. I live on Hartley Hill in Potrero and my ranch would be less than a mile away from the proposed power line. I and my adult daughter have severe health problems. We suffer from M.C.S. "Multiple Chemical Sensitivities". This came about from a major exposure to roofing materials and pesticides. The exposure left us electrically sensitive to many chemicals and EMF's (electric magnetic fields). This left us with immune system damage. Potrero has a community of people who suffer from M.C.S. Power lines cause documented health problems to those that live near them. Also are affected by their emf's are school children, businesses, and all housing.

Enclosed please read information on emf's affects on ones health, at the end of this letter.

Some other reasons why we oppose the powerlink are as follows.

1. Environment= The lines and towers will be kept clear of any vegetation by using mechanical clearing and chemicals. This will have a big impact where the line goes through the Cleveland National Forest.

2. Noise= High voltage lines produce a constant "buzzing" and "crackling" noise which is obnoxious!

3. Cost= Close to 4 billion dollars which California rate payers will be forced to pay!

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4. Tower Height= The tall towers pose a danger to aircraft and helicopter traffic which is extremely heavy in our area due to Border Patrol activity!

5. Fire Danger= High Voltage Lines can start fires if they fall due to accidents, earthquakes or wind which could be catastrophic in our High Fire Danger Area.

Inclosing there are alternatives that are "non-wire" energy solutions which would be environmentally less damaging. Such as improving existing power plants in San Diego County and encouraging more solar and wind energy production. These visually degrading 150' tall towers will be seen two miles, except on ridges where they will be seen for ~~four~~ miles I would like to end by saying any homes or businesses too close to this proposed route D. will be removed by using Eminent Domain. This changes the character of the community. Many are low income communities and they will be unfairly burdened by this proposed route.

I and my daughter could become very ill by this project coming so close to our property, and my Doctor advises me that he could no longer help us medically. For very definite health issues and unnecessary and expensive reasons the powerlink does not belong anywhere in San Diego County we object to the modified route D in our communities.

Sincerely,

*Lina W. Serrano*  
*Caren C. Serrano*

Lina W. Serrano  
Caren C. Serrano

# EMFs Effect Blood/Brain Barrier

by Cindy Duehring

There is increasing evidence that a number of electromagnetic fields (EMFs) may actually increase the toxicity of chemicals by allowing them more ready access to the sensitive nerve cells of the brain. Adding to their previous work that showed low-level magnetic fields from magnetic resonance imaging (MRI) increases the blood-brain barrier (BBB) permeability in rats, several Canadian researchers have shown that higher, clinically relevant MRI magnetic fields also increase BBB permeability.<sup>(1-3)</sup> In a concurrently published study, several Swedish researchers found a variety of microwaves can also increase BBB permeability.<sup>(4)</sup>

The BBB is the body's protective mechanism that prevents a number of harmful chemicals from passing into the tissue of the brain where the chemicals can cause cell damage. In general, the BBB selectively allows small, fat-soluble molecules and certain fat-insoluble molecules like glucose to cross over into the brain, while excluding other fat-insoluble (hydrophilic) molecules. The Swedish researchers note, "The intact BBB protects the brain from damage, whereas a dysfunctional BBB, as induced by epileptic seizures or extreme hypertension, allows influx of normally excluded hydrophilic molecules into the brain tissue. This might lead to cerebral edema, increased intracranial pressure and, in the worst case, irreversible brain damage."<sup>(4)</sup>

In their previous research, the Swedish researchers studied BBB permeability after exposure to three individual components of MRI, as well as a combination of all three fields, and found that the

exposures caused leakage of proteins normally blocked by the BBB.<sup>(5)</sup> Therapeutic x-ray irradiation has also opened the BBB.<sup>(6)</sup>

The puzzling subtleties of EMFs can provide some interesting twists when they interact with living organisms. The Canadian authors were especially surprised to note that subtle variabilities in different aspects of the fields could make a striking difference between increasing or decreasing BBB permeability.

Other research into the mechanisms of increased BBB permeability from microwave exposures has pointed to alterations in pinocytotic activity (activity of the pineal gland in the brain).<sup>(7)</sup> The pineal gland is little understood but is believed to be an endocrine organ involved in regulating hormones of the body. It produces melatonin, a hormone involved in sexual development. The Canadian researchers also found increased pinocytotic activity after an MRI exposure. They note that because both microwaves and MRI can influence pinocytotic activity, "this suggests that the same mechanisms may be activated across a wide bandwidth of

the non-ionizing portion of the electromagnetic spectrum."<sup>(1)</sup>

It appears the various EMFs can affect the stability of the metabolic processes of the brain, thus rendering it more vulnerable. Extremely low frequency (ELF) magnetic field exposure can alter calcium ion transport across the cell membrane, as well as free calcium concentration, both of which play a vital role in brain function and may affect BBB permeability.<sup>(8-9)</sup> The concentration of the enzyme ornithine decarboxylase, which also may mediate BBB permeability, can be altered by ELF magnetic field exposure.<sup>(10-11)</sup> One type of MRI exposure was found to elicit changes in a chemical reaction of a biological system involving a neurotransmitter recep-

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Researchers are only beginning to explore the complexities of this issue. People in our present generation are continually being exposed to a wide range of EMFs, including those emitted by microwave towers, radar scanning devices, cellular phones and towers, computers, medical devices, and electronic gadgets, to name a few. Their long-term subtle effects on cellular function and their possible synergistic interactions among one another largely remain to be studied.

The studies addressing EMF effects on BBB permeability may be of particular concern to workers concurrently exposed to low-level magnetic fields and chemicals. Factors that increase the permeability of the BBB also increase the toxicity of the chemicals normally blocked or inhibited by the barrier. The ability of EMFs to interfere with enzyme metabolism and electrical function in the brain may be of critical importance to patients with chemical sensitivi-

ties because other research is pointing to neurochemical changes in the brain as being the primary mechanism behind MCS. Many patients with chemical sensitivities also report sensitivities and adverse reactions to various EMFs.<sup>(13)</sup>

A workplace concern regarding brain tumors is raised by the Canadian researchers: "Epidemiological studies provide growing evidence that chronic exposure to ELF in the workplace increases the incidence of brain tumours in adults."<sup>(14)</sup> Note that the observed increase has been in gliomas (e.g. astrocytomas) which arise from tissue normally protected by the BBB as compared to meningiomas which arise from tissue which is not separated from the blood by the BBB.<sup>(15)</sup>

When establishing chemical exposure limits for the workplace, the Occupational Safety and Health Administration and other agencies have never even considered possible synergistic factors between chemicals and EMFs, let alone conducted research into the myriad possibilities. The Swedish researchers conclude that the studies showing EMFs can increase the permeability of the BBB "demand" further investigation into the possible health hazards.<sup>(4)</sup>

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