

In 1994, the American Bar Association Journal reported that EMF cases were being filed at the rate of about one per month. These are primarily power line EMF cases; ES cases are coming but so far are not an established area. Worker's compensation needs are also not being well handled regarding ES cases. As ES becomes more well-known and accepted, benefits will eventually follow.

Carpal tunnel syndrome cases have had similar problems. According to the National Association of Working Women in their book VDT Syndrome, computer-related health problems generally have not been recognized as work-related. Reasons they cite include the variety of pain symptoms which are not outwardly apparent, gradual development and the possibility of many potential causes or co-factors. They also point to the tendency of doctors to avoid risking their professional reputation where scientific data is lacking.⁹³ CTS cases now are many, with some successful results. (See Legal Resources, page 73.)

Now that the Americans with Disabilities Act is law, environmental illness patients are testing the limits of it. ES patients are faced with electronic barriers to employment. Also, EMF barriers restrict shopping and social outings too. If a person cannot access the workplace due to ES, that person has a disability. Maybe they can access another workplace instead; maybe they cannot. They might be able to work only from home; they might not be able to work at all.

Electrical Sensitivity Treatment Options

Is there a cure for ES? If you find one, please let us all know! Presently, there are ways to improve your health and reduce your symptoms, but there is not one clear path for everyone besides avoiding those things that bother you.

WARNING: The following treatment options are ways some chemically sensitive and/or electrically sensitive patients have sought relief of symptoms. You must decide for yourself what course to take, if any; medical guidance in making your decision is highly advisable.

1. Improving the Environmental Quality of Your Home

Avoidance of electrical/EMF sources as much as possible is the most satisfactory means of reducing ES symptoms. (See EMF Reduction in the Home, page 67.)

Other unhealthy factors beyond EMFs in the home entail chemical emissions from synthetic materials in plastics, carpeting, furniture, drapery, clothing, bedding, cleaning products, building construction materials, etc. MCS patients often find that they need to minimize all synthetic materials in their home and have basic, untreated natural materials — cotton, wood, porcelain tile, etc. — instead.^{49, 78, 86, 94, 106} (See Information Resources, page 72, for guidance in your individual situation.)

Having an environmental illness often requires a person to become housebound or have restricted activities beyond the home due to their inability to control environmental exposures beyond their home.

If the home is unlivable/unhealthy for the environmentally ill person, then the patient feels that they have *no* safe place to be away from chronic chemical/EMF exposures. This is very stressful and frustrating.

A perfect example of this predicament recently occurred in the United States government's new and first low-income housing for the environmentally ill, Ecology House in California. Soon after the MCS tenants moved in, they became more ill reacting to the building's unhealthy construction materials. EMF problems may be an unsuspected factor in the Ecology House, too. These already ill people are further ill from their new home. Several Ecology House residents have had to sleep outside, sleep in the bathroom, breathe from an oxygen tank, or go to a friend's house to escape the unhealthy environment within their own home.^{98, 116}

ES patients have similar problems. Many ES and MCS patients have resorted to camping out in the wilds to avoid both electrical and chemical exposures to the utmost. Only then do they feel better.

Sorting out which factors are bothering you is very helpful on the road toward feeling better again. Other sensitivities as noted in Diagnosis of Electrical Sensitivity,

page 37, should also be considered.

2. Natural Fiber Clothing

Clothing made of synthetic fibers (polyester, acrylic, rayon, etc.) adversely affect many of the chemically sensitive. Undyed, untreated, organic cotton clothing is preferable for MCS patients.

ES patients need to worry about the electrical, rather than the chemical, properties of clothing fibers. Natural fibers such as cotton, linen, and silk are better for the ES patient too.

Synthetic fibers in general create static electricity problems, may act as an EMF wave-guide material, attract positive ions, hold heat and are best avoided.^{51, 97} For example, a woman with a burning skin reaction from computers in the office may find wearing nylons intolerable at work. Nylon, electrically, is an insulator. When EMF exposure creates induced currents in the body and produces heat, nylon prevents adequate release of the induced heat, intensifying the reaction.

3. Metal Avoidance

Metal jewelry, watches, and metal enclosures can be troublesome for some ES patients. Avoiding these items may be necessary.^{9, 10, 105} (See Metal Sensitivity, page 42, and Reactions to Watches, page 43.)

4. Grounding

When you walk across a synthetic carpet and reach for the metal doorknob, sometimes you get that familiar electric shock. That shock discharges the energy stored by the friction of walking across the floor.

Storing electricity in the body can build up stress. To release stored electricity, walking barefoot on the bare ground or grass is helpful. Distancing yourself from power lines and other EMF sources while doing this grounding technique is best. This method is called grounding from the electronics term relating to discharging electricity to the earth.

The Environmental Health Center in Dallas has recommended this grounding technique to ES patients. Twenty minutes per day of grounding has helped some ES

patients. An alternate method is to lie down on the ground if the weather does not permit bare feet.

5. Product Warning

Beware of all products claiming to reduce your EMF exposure or reduce the effects of EMF exposure. The author has tested some of these only to find that they did not stop her ES symptoms from occurring when EMF exposed.

An important point to keep in mind is that if the gaussmeter can still measure EMFs, the product is not 100% effective in protecting you. Induction heating would still be occurring.

All EMF protection products should be considered strictly experimental. If you choose to test any of these yourself, check the refund/return policy of the dealer first.

Some products are emitting a field of their own which is claimed to counter other EMFs. ES patients would do best to avoid all EMF-producing products of any sort. Science needs to understand that the best way to reduce EMF reactions is not by using one EMF to cancel/fight another EMF, but all EMFs need to be reduced as much as possible. Metal EMF shielding technology implanted at the time of product design is a necessity needed now on all electrical appliances.

Magnets have an energy field also. Any magnet therapy should also be considered questionable and experimental for the ES patient, particularly when placed near the head.¹⁰⁵

6. Antigen Therapy

A common method of treating environmental illness patients in general is first by allergy testing of foods, chemicals, and sometimes metals. Once allergic substances are pinpointed, those substances can be avoided. Also, chemical antigen shots may be administered representing neutralizing doses for those allergens. EMF reactions have been neutralized chemically, but documented information in this area is scant.^{4, 10}

While chemical antigens have provided some reported symptom relief for food and chemical "allergy" symptoms, daily shots are usually required to maintain the program.

A question arises regarding the long-term use of antigens made from your reactive foods/chemicals. The body produces antibodies upon antigen injection for fighting symptom reactions.

7. Charged Water Technique

Another allergy test involves determining the ES patient's reactive EMF frequencies and non-reactive frequencies. The focus is on finding at least one non-reactive frequency. (See Diagnosis of Electrical Sensitivity, page 37.)

For EMF "allergy" treatment, vials of water are charged at a specific non-reactive EMF frequency or frequencies. The water used is saline or mineral water that the patient does not react to. The ES patient is told by the doctor to grasp the vial of charged water for five minutes once or twice daily to reduce general EMF sensitivities. Also, they can hold a charged water vial to reduce ES symptom reactions from EMF exposure.^{4, 10}

Once non-reactive EMF frequencies are determined, future vials can be charged without the patient present. Then, the vials can be mailed to the patient without need of a doctor's visit each time.

After using a charged-water vial to neutralize a severe EMF reaction, ES patients may feel the effects of that vial discontinued — drained. Charged vials lasted about two weeks in the United States while England's water held the EMF charge for about one month or more.¹⁰

EMF neutralizing vials of charged water representing individualized non-reactive EMF frequencies has been done by Cyril W. Smith, Ph.D., in cooperation with Dr. Jean A. Monro at the Breakspear Hospital in England. The Environmental Health Center in Dallas, Texas, has also used this technique with Dr. William J. Rea's cooperation.

This technique may provide a way for the patient to neutralize an EMF reaction; however, the initial EMF testing session can provoke all symptoms. EMF testing may also elevate sensitivities, particularly if a reactive EMF frequency is held for more than 20 seconds. Charged vials could create a dependence on certain EMF frequencies to the point that those frequencies also produce "allergic" reactions. At that time renewed

testing is needed to reveal current neutralizing frequencies.¹⁰

8. Salt Water Bath

Some ES patients report that bathing in salt water, either a salt water bath (using rock salt) or in the ocean, is helpful to temporarily alleviate their symptoms.¹⁰ The reason could be because the salt water is electrically conductive and helps absorb the ES patient's own EMF signals. (See Metal Sensitivity, page 42.) Ordinary table salt includes additives, including an aluminum derivative, so is best avoided, even for bathing.¹⁰⁶

9. Detoxification

If toxicity from chemical or metal exposures is present, detoxification can reduce stored toxins in the body.⁵⁹ By detoxification, the body may reduce EMF sensitivity as well as reduce chemical sensitivity. "Detox" includes exercise and saunas to sweat out toxins. Home saunas can be a problematic EMF source, so turning the sauna off after preheating it may work better for ES patients.

At the Environmental Health Center in Dallas, detoxification has included medically supervised saunas with vitamin B₃ (niacin) supplements and exercise to draw out poisons through the skin. This therapy is called the Hubbard Technique.⁸⁶ Other vitamin and mineral supplements are medically adjusted to compensate for the body's loss of these during sweating.

Also, detox means not adding back poisons that are being excreted. One way to reduce toxic intake is by using fresh, organically grown foods — no pesticides, herbicides, fungicides, or chemical fertilizers. Also healthy is avoiding packaged foods which contain artificial ingredients such as sweeteners, dyes, colorings, flavorings, pesticides, flavor enhancers, preservatives, etc. Food additives have been implicated in some cases of attention deficit disorder (ADD) in hyperactive children.⁵⁸ The Benjamin F. Feingold, M.D. diet has helped some hyperactive children return to normal health. A basic natural foods diet like Feingold's can determine whether food additives are a factor in ADD or in a person's MCS/ES symptoms.

An elimination diet — eliminating one food at a time — could be used to check whether specific foods are producing allergic reactions. By keeping a list of your foods eaten, you can assess whether a particular food is causing a reaction if eaten again. Varying your meals so that you eat a good variety of species and types of food helps reduce food allergy reactions caused by eating one food too often. Three of the most common food allergens are milk, wheat, and corn. Using variety in your diet may mean switching to other grains such as spelt, quinoa, and amaranth.^{47, 48}

Herbs can also play a part in the detoxification process to help cleanse the liver, colon, kidneys, and blood of stored toxins.^{107, 108} The liver is the body's main detoxification organ.^{61, 124} A naturopath who understands herbs may be helpful if you are interested in herbal therapy. MCS patients may not be able to use some or all herbs, particularly if the herbs are not organic.

Periodic fasting is an old form of detoxification. Patients who are already weak or malnourished should not attempt fasting as it will further weaken them. Fasting can help remove stored toxins, particularly if lots of pure water is taken. Chemically sensitive patients often develop intensified symptoms when hungry or fasting, because stored toxins are resurfacing in the blood.

Detoxification can be very difficult for the chemically sensitive. Care needs to be taken that "detox" is done gradually, and preferably medically-supervised to minimize the reactions and ill health possible when the stored toxins further mobilize in the body. The detox method can seem like you feel worse before you feel better.

An intensive doctor-assisted detoxification program may be warranted when all else fails to help the MCS/ES patient. The Hubbard Technique is one example. Another interesting example is Gerson Therapy, carried out at a Mexican hospital, and used primarily for advanced-stage cancer patients. This "detox" and rebuilding therapy primarily consists of 13 glasses of fresh, raw organic fruit and vegetable juices per day, three organic vegetarian meals daily, enemas to speed detoxification, pancreatic enzymes and selected vitamin/mineral options individualized to the patient's needs. This therapy

is outlined in Max Gerson, M.D.'s, book, A Cancer Therapy.^{60. 61} Other healing and detoxification programs have also used raw organic vegetable and fruit juices with a natural diet. The Bircher-Benner clinic, Zurich, Switzerland begun in 1897 is another example.³⁷ One drawback is that using an electric vegetable juicer is going to be off-limits for most ES patients without help.

Detoxification of any kind is assisted by exercise. Aerobic exercise like bicycling, jogging, swimming, etc., can be a great stress reliever, too. Many factors determine our health — quality of our diet, exercise, air, water, mental attitude, etc.

10. Energy Balancing

The body is electromagnetic. When a person is ES, their adaptability to other EMFs is impaired.

Toxic chemical exposure, metal toxicity, and prolonged EMF exposure are all possible ways the body could become electromagnetically impaired. Each type of chemical and metal is electromagnetically unique. A preponderance of certain chemical or metal deposits in the body could change the way that the body reacts electromagnetically with its surroundings. Nervous system and immune system damage from toxic exposures may also impair the body's EMF tolerance capabilities.

The philosophy of the acupuncturist is that the body manifests energy imbalances before physical symptoms appear. By correcting energy imbalances early, disease processes are diverted before symptoms manifest, thereby averting disease at its earliest stage.⁷³

A medical example of the promise for electromagnetic interpretation of disease comes from medical experiments at Yale University in the 1970's. Ninety-eight percent of the female cancer patients studied showed a negative electrical potential at the cervical cancer site relative to the abdomen. When female non-cancer patients were examined, a positive electrical potential was measured 81.9% of the time instead. The conclusion proposed from this study was that cancer is the result of changes in the body's organizational electromagnetic fields.⁴²

Apparently health and disease each have their own electricity. There is also evidence that every disease has an electromagnetically unique pattern.⁸⁵ Finding the electricity of health and reducing the electricity of disease in whatever form (chemicals, metals, electromagnetic exposure, etc.) appears to be the challenge of the twenty-first century.

Perhaps in the future a mere blood sample checked by spectrum analysis for absorption rates at various EMF frequencies could disclose foreign bacteria, viruses, fungi, chemicals, metals, etc., invading the body. A check for unhealthy EMF frequency absorption rates could indicate the problem and lead to a custom-designed remedy suited to the patient's EMF picture. A cataloging of homeopathic remedies by their EMF absorption rates could provide a ready remedy electromagnetically compatible with that person.

The use of EMFs in the treatment of illness by conventional medicine is in the early discovery stages. This trend is called energy medicine or electromedicine.

Doctors at Scripps Clinic in La Jolla, California, recently used a battery-operated EMF device to induce sleep in insomniacs. By placing this device on the patient's tongue for 20 minutes before bedtime, sleep was caused in 80% of the insomnia sufferers. This EMF gadget delivers pulses of 27 MHz (27,000,000 Hz) EMFs to the brain.⁸⁰ Therefore, brain waves are being affected. Notice how EMFs induce sleep in this case and with some ES patients too.¹⁰² Some people can get insomnia from EMFs instead; both are neurological changes that can be caused by EMFs.³⁹

ES patients should avoid such EMF-treatment devices which may only make them worse. These EMF-emitting devices are experimental and highly questionable in light of the potential health hazards of EMFs, particularly cancer. (See The EMF Cancer Issue, page 62.)

Many forms of alternative healing methods rely on the balancing of the body's "vital energy" as the Chinese call it. Acupuncture is an ancient technique used to balance the body's electromagnetic fields. Other energy balancing forms are acupressure,

homeopathy, Therapeutic Touch, Tai Chi, and Qi Gong.^{56, 74, 76, 105, 111} These alternative therapies are designed to help the body balance its own electromagnetic field energy without artificial EMF sources.

Some ES patients and allergy patients claim to have been helped by various energy balancing therapy.^{105, 111} How you proceed is your own decision — what helps one person will not necessarily help another person, as each person is electrochemically different. It would seem to make sense for detoxification to accompany any energy balancing where chemical or metal exposure is a suspected ES initiator, so that the corrections would be more lasting.

11. Miscellaneous

A few other possible factors that may determine the severity of ES reactions include antioxidants, minerals, acid/alkaline balance (pH), and enzymes.

Antioxidants are a group of vitamins, minerals, etc., that are known to reduce cellular damage from radiation and other degenerative processes. Antioxidants work by diminishing free radical activity caused by toxic chemical and metal exposures, EMFs, and stress.¹⁰⁸ Common antioxidants are vitamins C, E, and the mineral selenium. Some herbs such as chaparral also have antioxidant properties. Superoxide dismutase is an enzyme with antioxidant properties.^{24, 52}

Whether antioxidants are helpful in delaying or diminishing ES symptoms from EMF exposure is not yet clear.

Electromagnetic field exposure has been shown to displace minerals, particularly calcium. Minerals are the body's metals. All minerals in the body are called electrolytes and have a small electrical charge.²⁸ Minerals help in the transmission of nerve signals through the body. When an imbalance of minerals is present, then the body's electricity may become imbalanced too.

Dr. Max Gerson found that the body's potassium is inactive relative to sodium in a chronic disease state.⁶¹ A September, 1991 Journal of Hypertension article (p. 167) parallels that concept by stating how a potassium deficiency can have an adverse effect on

the body's nervous system. The article cites the sodium-potassium pump on the nerve cell membrane as the problem location. As previously noted, neurological problems are quite frequently noted in ES patients.

The place for minerals in the ES picture needs research.

Another factor needing further investigation relative to the ES picture is the body's acid/alkaline balance (pH). Blood is normally slightly alkaline. Maintaining an alkaline basis in the blood may reduce microorganism infestations, as most microorganisms cannot live in a high alkaline environment.⁴³

Some ES patients have experienced increased symptoms when taking acid-forming foods such as alcohol and sugar. Eliminating these products is recommended in general for environmental illness patients, according to Sherry Rogers, M.D., an environmental medicine physician.⁵⁹

Alkaline-forming foods are primarily vegetables and fruits.

Enzymes help the body process foreign material to detoxify the body. MCS patients are often low in some enzyme levels, perhaps due to chemical overload. Enzyme function and enhancement is another research question regarding ES symptoms and their diminishment^{94, 106}

12. Drug Intervention

Gamma-hydroxybutyrate (GHB) has been used experimentally in the treatment of ES symptom reduction.¹³⁴ Currently, GHB treatment is not available in the United States because GHB cannot be legally sold here. GHB has known central nervous system effects including insomnia relief and muscle relaxation. Apparently, it is because of these neurological effects that GHB has been shown to temporarily reduce some ES symptoms that have a neurological basis. The relief from GHB is a form of symptom suppression, not a cure. Daily pills are required to maintain the effects. However, the outcome of using a muscle-relaxant for long periods of time is unknown. This method should be considered experimental.

What are Electromagnetic Fields (EMFs)?

Electromagnetic fields (EMF or EMFs) are fields/waves of energy that are emitted by all electrical sources. EMFs are also produced by the earth and natural weather conditions. Common electrical sources of EMFs are electric power lines, electric home and office appliances, motors, wall wiring, electrical substations, transformers, and radio/radar/microwave transmitters. These sources create non-ionizing radiation — radiation which is not currently known to break molecular bonds like x-rays and ultraviolet (ionizing radiation) do.

The sequence of EMFs from low-energy to high-energy is displayed in the electromagnetic spectrum diagram which follows, showing all of the wave forms relative to each other, based on their alternating current (AC) cycles per second. Extremely low frequency (ELF) sources are all electrical utility dependent products. Very low frequency (VLF) products include computer monitors and television sets. Direct current (DC) (no alternating cycles) occurs at the zero point on the chart. Some ES patients may be bothered by DC, but generally DC is much less troublesome than AC.

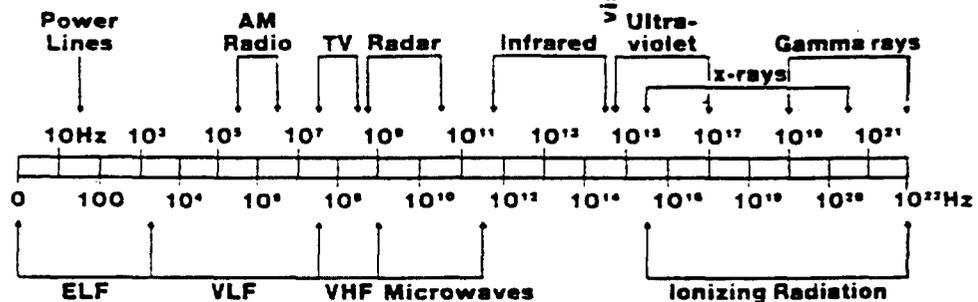
The more the alternating current cycles per second, the more energy in the EMF wave. Therefore, x-rays have more energy than most EMFs while power-line type radiation (ELF) has the least energy.

Science has been debating the health hazards of non-ionizing radiation for over twenty years. The more EMFs have been studied, the more health hazards are becoming apparent.

Currently, low-frequency EMFs are being investigated primarily in connection with Alzheimer's disease and cancer.^{87, 95, 113, 128} Other likely health hazards of low-frequency EMFs are miscarriage, birth defects, and electrical sensitivity.^{2, 53, 68, 69}

ELECTROMAGNETIC SPECTRUM

$10^{12} = 1,000,000,000,000 = 1000 \text{ GHz} = 1 \text{ trillion cycles/second}$



Source: United States Department of Energy¹²⁷

Hz = Hertz, meaning cycles per second

$10^3 = 10 \times 10 \times 10 = 1,000$ cycles per second

ES patients can have EMF frequency sensitivity problems at any frequency. Inexpensive gaussmeters cannot measure most frequencies in the VLF range. Inexpensive equipment for measuring radio frequency and below in the home would be an interesting and useful item, but is not currently commercially available. When these instruments become available, ES patients will more easily find and "see" fields they may be reacting to.

The EMF Cancer Issue

Do electromagnetic fields (EMFs) like those found near electrical power lines and appliances cause cancer? Scientists in over 22 countries are investigating the possible EMF/cancer link, with more than 200 health-related EMF studies now underway worldwide.¹²⁸

Evolution of the cancer issue has brought a focus to certain cancers that appear frequently in EMF studies: leukemia, breast cancer, and brain cancer.¹²⁸ Studies of children living near high-voltage power lines and workers exposed to higher-than-normal EMFs (electricians, utility linemen, etc.) both show increases in leukemia. Electrical

workers in the United States and Sweden both develop a higher-than-average rate of brain cancer.^{22, 77}

Another aspect of the current EMF debate involves the sometimes noted increase in breast cancer incidence among *both* men and women in high electrical exposure occupations. The National Cancer Institute's statistics indicate that 1 out of every 8 women in the United States will get breast cancer. Power line EMFs in some studies reduce levels of the hormone melatonin, a natural tumor suppressor. By reducing melatonin, EMFs are suspected of promoting and perhaps initiating the cancer process.^{112, 128}

In the National Cancer Institute's June 1994 Journal, a University of North Carolina study found that female electrical workers had above average breast cancer deaths. The electrical workers' exposures to power line EMFs as telephone repairers, installers and line workers is suspected as a factor in their increased breast cancer incidence.

Several prior studies of male electrical workers also found higher-than-normal breast cancer rates for them. For example, in 1990 the Hutchinson Cancer Research Institute in Seattle, Washington studied 250 male breast cancer patients. They found that workers with the most EMF exposure — electricians, power workers, and utility linemen — had six times the level of breast cancer as workers without high EMF exposure.⁷⁷

According to the United States Department of Energy's new booklet, Electric Power Lines, "Laboratory studies have shown that it is unlikely that EMF can initiate the cancer process. Some studies suggest, however, that power-frequency EMF may promote development of certain existing cancers."¹²⁸ Studies now on-going are testing both the ability of EMFs to cause cancer promotion and cancer initiation.

Many toxic chemicals are known or suspected cancer initiators. A 1992 study by Frank Falck, M.D., at the University of Connecticut showed high levels of the chemicals PCB, DDT, and DDE in cancerous breast tumors compared with benign breast lumps. A subsequent study at Mount Sinai School of Medicine, New York, found four times the

level of breast cancer risk for women with the highest DDE blood levels.⁴⁴ A United States study of 200 chemically sensitive patients found DDT and DDE pesticides in 62% of patient blood samples. These pesticides occurred more often than any other type of pesticide found.⁹⁴ Chemical exposures combined with EMF exposures sound like a recipe for cancer.

Prudently, the Swedish National Electric Safety Board in 1993 announced that "...the Board will act on the assumption that there is a connection between power frequency magnetic fields and childhood cancer, when preparing regulation on electrical installations."¹²⁸

Electromagnetic fields are not only found near power lines, but also emanate from home and office electrical appliances. Computer monitors, fluorescent lights, microwave ovens, and electric clocks are common EMF sources. At work, computer users are exposed to EMFs for prolonged periods of time.

The time has come to plan and implement preventative measures that reduce EMF exposure throughout our electrical society, indoors and out. The potential health and legal implications of not doing so are immense.

Warning Signs of EMF Problems

Certain signs of possible EMF exposure situations can be noted without having a meter, merely by looking around. (Or for an ES person, just by being there.)

An environmental problem should be suspected when an ES patient repeatedly reacts to a particular location. The question needing to be solved is specifically what the person is reacting to. Keeping chemical exposure possibilities and other sensitivities in mind, EMF sources need close analysis.

Clues of EMF exposure can be detected by static on radio station channels or distortions apparent in the television set picture or computer monitor screen. Sources of EMF-caused interference include power line radiation, appliances, and wall wiring electrical problems.

Locating the source of all EMFs is necessary for ES patients in order to plan EMF

reduction strategies for minimizing symptoms.

A look outside may find EMF sources such as electric power lines, power line transformers (metal cans on the utility poles or metal boxes on the ground), an electrical substation, and radio/radar/microwave transmitting towers. All of these can be troublesome for the ES patient.

After a thorough check for potential EMF sources, measuring EMF emissions is the next step. Either using an EMF testing service or obtaining the measuring equipment and testing EMFs yourself will help you "see" what levels of EMFs are present, where the highest readings are, and where hidden EMF sources are. (See EMF Resources, page 74.)

What a Gaussmeter Will and Will Not Tell You

A gaussmeter is a measuring device to detect low-frequency magnetic fields. Electromagnetic fields have two components — an electric field and a magnetic field. An ELF (Extremely Low Frequency) gaussmeter will measure the 60 Hz (United States) magnetic field from power lines, household wiring, and some electrical appliances. The ELF magnetic field is currently of most concern in ongoing scientific cancer studies regarding EMF health effects. An ELF gaussmeter is the type of equipment most commonly used for home EMF measurements.

However, ES patients can be troubled by both electric and magnetic fields at any frequency. Therefore, both ELF electric and magnetic field readings ideally would be taken at the home of the ES patient. An ELF electric field meter measures the 60 Hz electric part of the EMF. EMFs in the ELF through microwave range are generally most limiting and troublesome in the daily lives of ES patients.

Measuring higher frequency magnetic fields, such as very low frequency (VLF) from computer monitors requires a VLF gaussmeter. Inexpensive ELF gaussmeters are often inaccurate for measuring computer monitors and other appliances that also produce these higher frequency fields. VLF fields record high readings in ELF gaussmeters not sophisticated enough to differentiate between ELF and VLF magnetic fields. Before

purchasing a meter, first ask meter manufacturers what field(s) their meter is designed to measure and what (power lines, computers, etc.) you could accurately measure with the meter.

1. Gaussmeters generally do not measure electric fields (E-fields), only magnetic fields (H-fields) from electrical sources. Some gaussmeters have an electric field measuring component in addition to the magnetic one. Power line and electrical appliance emissions are 60 Hertz electric and magnetic fields. You would need an ELF electric field meter or a gaussmeter with an electric field measuring feature to measure the electric component of the ELF field. (See diagram below.)

E-Field	ELF Electric Field	VLF Electric Field
H-Field	ELF Magnetic Field	VLF Magnetic Field

2. Gaussmeters do not measure all forms of electromagnetic radiation, only low frequency magnetic fields. Sound waves, x-rays, radon, microwaves, etc., require other types of detection equipment instead of gaussmeters.

3. Gaussmeters do not read magnetic field levels below their own level of sensitivity. For ELF gaussmeters, a sensitivity level down to .1 milligauss is preferable; for VLF gaussmeters, .01 milligauss. The magnetic field reduces with distance from the source, but does not reach zero when your meter does — the field reduces to infinity. Someone sensitive to these magnetic fields may become ill at levels below those you can measure. (They may also be reacting to other types of fields — sound, electric field, microwaves, radio wave harmonics, etc.)

4. Most inexpensive gaussmeters will only measure one direction of the field at a time. To find the highest reading, turn the meter horizontal, vertical, and sideways to the EMF source. A triple-axis meter will measure the three dimensions at once for one combined milligauss reading.

5. Gaussmeters show you where measurable magnetic fields are and their

measurement. However, there are no United States government health regulations regarding power line radiation.

EMF Reduction in the Home

Time Magazine, October 26, 1992, reported on a milestone Swedish study linking extremely low frequency (ELF) electricity to cancer. The study, conducted by Stockholm's Karolinska Institute, evaluated cancer incidence among almost 500,000 people who lived within 328 yards of high-voltage electrical lines from 1960 to 1985. They found a direct correlation between childhood cancer incidence and incremental increases of ELF magnetic field exposures. Cancer in children was lowest below 1 milligauss exposure. Cancer rates were three times higher where 2 milligauss levels occurred and four times higher where three milligauss levels occurred. Leukemia was the cancer type noted in the study.²²

The conservative consensus building now is that ELF magnetic field exposure levels above 2 milligauss are best avoided by the public at large.¹² United States government guidelines or regulations have not yet entered this area. Of note, the Bonneville Power Administration in Portland, Oregon — an agency of the Federal government — discourages access of their electrical power line right-of-ways for new uses (playgrounds, parks, etc.) which would increase public EMF exposure.¹²⁸

For electrical sensitivity patients, EMF exposure should be as low as possible, given the economic feasibility of doing so.

Having your home tested for EMFs may uncover some surprises. One often noted problem that is fairly easy to correct is improperly grounded electrical wiring in the home. Published accounts of ES patients using EMF testing technicians point to wiring problems from ungrounded electricity as a common item that can be resolved, reducing EMF exposure.^{65, 109}

An EMF testing survey entails measuring power line radiation, wall wiring, and appliance EMF emissions. Power line radiation coming into the home can be detected by shutting off all electricity in the house at the electrical fuse box. Then, power line

radiation coming indoors can be measured with ELF testing equipment.¹⁰⁴

If you are having a problem with power line EMFs, ask your EMF testing technician to assist by acting as a negotiator when discussing the power line problem with your electric utility. Power line remedies are, however, usually difficult to get done, may prove expensive to the customer, and may not be helpful enough for the ES patient.

While EMF testing is useful, it is important to keep in mind that people who are electrically sensitive may feel reactions to EMF levels below those easily measured. For instance, some severely sensitive patients report reactions to power lines or airport radar one mile or more away. Only very sensitive meters could detect power lines that far away.

Being ES means that you are hypersensitive to EMFs, even small amounts. While your electric utility company and your independent EMF testing technician may say that your home has very low EMF levels, for you that may not be enough. This is how many environmental illness people become homeless, of sorts. Moving may be your best option in this case, but the question is "Where can you safely move to?"

Checking your home for EMF wiring and grounding problems is done by measuring the ELF field inside with all of the lights turned on. A map of the home's floor plan may be drawn and EMF readings recorded at various points. Levels of ELF magnetic fields recorded above three milligauss near walls without appliance or power line intervention are commonly miswired circuits out of compliance with the National Electrical Code (NEC).¹⁰⁴ All changes made to grounding and wiring must comply with NEC and any local building code to minimize fire hazards and be legal with current building regulations. An electrician can help with needed corrections.

Locations in which you spend more time should be thoroughly checked. Appliance emissions could be tested too, but for the ES patient, using or being near operating electrical appliances is best minimized anyway.

In addition to EMF testing, some EMF technicians provide EMF reduction services and make suggestions as to how you can reduce EMF exposures. Some electric

utility companies now measure ELF magnetic fields inside and outside the home as a free service. However, they usually do not give advice for home EMF reductions.

The four primary ways to reduce EMF exposure are by 1) increasing your distance from the EMF source(s), 2) reducing time spent in unavoidable EMF areas, 3) using appliances with no or reduced EMF emissions, and 4) shielding, when economically feasible.¹²⁸

ELF magnetic fields easily penetrate walls, so power line radiation is penetrating, even indoors. These magnetic fields are difficult to shield, usually requiring a special nickel-iron alloy of the Mumetal variety or low-carbon steel. Generally, the more nickel content in the alloy and the thicker the metal sheet, the more shielding is provided. Mumetal is helpful for reducing small EMF source problems, but expensive and cumbersome for large products.^{12, 35} EMF technicians sometimes have magnetic shielding material for EMF reduction jobs. (See EMF Resources, page 74.) ELF electric fields are easily shielded by electrically grounded metals such as copper or aluminum. The electric fields are less penetrating than the magnetic fields and are reduced somewhat by walls and other obstructions.

The most ill ES patients turn off electricity to all or a part of their house to reduce ES reactions and to sleep. Essential equipment needs to be accounted for during the electrical "down-time". Refrigerators cannot be safely turned off for more than one hour, unless other arrangements are made for food contents — like using an ice box, etc. Electric clocks will need to be reset after the down-time, so battery-operated ones are preferable, unless the ES person is troubled by battery sources as well. Computer data needs to be saved prior to down-time, if you or someone else in the home is still using a computer.

How do you feel when all electricity in the home is shut off? Some ES patients find significant help using this technique — particularly for sleeping at night after turning the electric circuit to the bedroom off. This is a good way to check whether other factors may be bothering you also.

When a patient is both MCS and ES, a serious question develops regarding what utilities they can use to cook with and to heat their home — natural gas or electricity? Usually electricity is used for MCS patients, because many are very sensitive to the natural gas. Once electricity becomes an unhealthy factor for them, some turn off electricity to part or all of their home in order to minimize ES reactions. Doing daily living tasks then becomes very difficult or impossible without help.

Ways to reduce EMF exposure for the ES patient include unplugging all unused appliances, discontinued use of the television set and computer, using gas (if not MCS) or other substitute appliances, and using incandescent light bulbs but not energy-efficient or fluorescent bulbs.

Some appliances have EMF readings when plugged in, but turned off, so unplugging unused appliances is most helpful for EMF reduction.

ES patients may become sensitive to a television set at 40 feet or more, even one turned on next door.⁹ So, ES patients often not only do not watch television from a distance, they do not have one operating at all in the house. Television EMFs easily penetrate walls and are difficult to reduce. For the ES, reduction is usually not enough.

Gas appliances are sometimes helpful for ES patients that are not MCS. Gas stoves, refrigerators, heaters and ovens can reduce EMF exposure. Older gas appliances have a pilot light that burns a small amount of gas fuel constantly which may increase or lead to chemical sensitivity problems, although use no electricity. Newer gas models generally have an electronic feature that only activates the gas when you turn the appliance on. This electronic part is electrical, thus an EMF source. Newer gas appliances may need to be EMF tested prior to purchase to determine whether they suit your situation.

The most severe ES patients cannot use a standard phone, due to the EMF exposure from the phone earpiece. Some United States patients are using a speaker phone to remedy this problem. An air hose phone adapter is available in Sweden to allow ES patients to use a phone at a distance of six feet away.

Fluorescent lighting is a common irritant to ES patients. Unfortunately, fluorescent lighting is economical relative to other lighting and is therefore in most commercial and governmental buildings. Doctor visits may uncover fluorescent lighting there too. Environmental medicine doctors have found it necessary to turn off fluorescent lighting in the patient area when ES patients are there. Use of daylight from windows and floor lamps with incandescent bulbs instead may avoid or reduce EMF reactions that could occur with lighting from fluorescent bulbs.⁹²

Other innovative solutions to EMF reduction problems reported by severely sensitive ES people include grounding metal window and door frames, removing non-essential fuses from the car (clock, etc.), disconnecting built-in electric clocks, re-wiring the house with Teflon-coated wire, re-wiring lamps with metal-shielded wire, and turning the knob in the refrigerator to "off" to prevent the motor from running while in the kitchen.

Endnote

This book can in no way describe the broken dreams, the failed marriages, lost careers and homes, shattered family relations, ridicule, and hopelessness that haunt the environmentally ill.

Their voices echo similar words, even when they know no others likewise affected. When the Europeans explain their own symptoms and so describe us, we feel whole again — validated.

And, by finding others with familiar problems, we find friendship with those who understand us without explanation. After the difficult journey, it is good to find a friend. Though we may not be able to help each other get well, we discover that we are not alone.

RESOURCE GUIDE

Information Resources:

- National Center for Environmental Health Strategies, 1100 Rural Ave., Voorhees NJ 08043, Phone: (609) 429-5358.

Chemical sensitivity information and newsletter The Delicate Balance.

- The Environmental Health Network, P.O. Box 1155, Larkspur CA 94977, Phone: (415) 541-5075.

Support group network for chemically sensitive with newsletter — The New Reactor.

- Human Ecology Action League (HEAL), P.O. Box 49126, Atlanta GA 30359, Phone: (404) 248-1898.

Chemical sensitivity information and newsletter The Human Ecologist.

- Electrical Sensitivity Network, c/o Weldon Publishing, P.O. Box 4146, Prescott AZ 86302.

United States electrical sensitivity group in the formative stages. Contact the publisher for current group information.

- Association for the Electrically and VDT Injured, P.O. Box 15126, 10465 Stockholm, Sweden, Phone: (011) 46 8 7129065. INTERNET (worldwide web address): <http://www.isy.liu.se/~tegen/febost.html>

International contact for electrical sensitivity groups worldwide. Their INTERNET information is excellent and available through many public libraries.

Medical Resources:

- American Academy of Environmental Medicine, 4510 W. 89th St., Prairie Village KS 66027, Phone: (913) 642-6062.

Environmentally ill patients who seek medical doctors specializing in environmental medicine can get referrals in their area.

- Environmental Health Center, 8345 Walnut Hill Ln., Suite 205, Dallas TX, 75231, Phone: (214) 368-4132, Fax: (214) 691-8432. *no RF EMF tests 12/26*

William J. Rea, M.D. is the chief physician at this medical clinic for the environmentally ill. A pioneer in the experimental treatment of ES patients with the charged water technique.

- Allergy and Environmental Medicine, Ltd., Breakspear Hospital, Belswains Lane, Hemel Hempstead, Herts HP3 9HP, England, Phone: 01442-61333, Fax: 01442-66388.

Dr. Jean Monro is the medical director. English pioneer of the charged water technique for ES patients.

- Gerson Institute, P.O. Box 430, Bonita CA 91908, Phone: (619) 472-7450.

Information center for the Gerson Therapy, an intensive detoxification program. Primarily used for alternative cancer treatment and not environmental illness, but may be useful where other methods have failed and chemical detoxification is needed.

- Check your local phone directory.

Legal Resources:

- Robert Strom Foundation
Michael Withey
Schroeter, Goldmark & Bender
810 Third Avenue, Suite 500
Seattle WA 98104
Phone: (206) 622-8000

Current central contact for EMF-related legal cases. Referrals to EMF lawyers in your area.

- Check your local phone directory.

EMF Resources:

- missing*
- National Electromagnetic Field Technicians Association (NEFTA), 628-B Library Place, Evanston IL 60201, Phone: (708) 475-3696.

Organization of independent EMF testing technicians that provides referrals to members in your area — United States and Canada. Some have metal EMF shielding material.

- 12/31/06 info requested*
- VDT News, P.O. Box 1799, Grand Central Station, New York NY 10163, Phone: (212) 517-2802, Fax: (212) 734-0316.

Provides publications VDT News and Microwave News regarding the health hazards of EMFs. List of gaussmeter manufacturers available for \$1. Back issue reprint packets on current EMF topics, EMF Resource Directory, etc. Sample issue of VDT News, \$5.

- 6-35/11 info requested*
- National EMR Alliance, 410 West 53rd St., Suite 402, New York NY 10019, Phone: (212) 554-4073, Fax: (212) 977-5541.

Publication Network News provides current information on EMF activist efforts, general EMF news, and has adopted the electrical sensitivity issue as an on-going feature in the newsletter.

- The Labor Institute, 853 Broadway, Room 2014, New York NY 10003, Phone: (212) 674-3322.

Informative booklets entitled Electromagnetic Fields (EMFs) in the Modern Office and Multiple Chemical Sensitivities at Work. Other booklets and videos also available from this labor union group concerning worker health.

- University of California, Labor Occupational Health Program, School of Public Health, 2515 Channing Way, Berkeley CA 94720, Phone: (510) 642-5507, Fax: (510) 643-5698.