Electrical Hypersensitivity (ES)

The Electrical hypersensitivity set of articles is separated into 8 sections, each of which can be individually downloaded. It is a 'work in progress' incorporating new information whenever time permits.

Section 5

What you can do if you have ES

1. Electrical Hypersensitivity, a reaction to the environment; introduction, should ES be diagnosed as an illness? Should ES be diagnosed as an allergic (atopic) condition? Should ES be diagnosed as a 'functional impairment'?

2. What ES is and what produces it; ES and the problems of diagnosis; Allergy/functional impairment; what produces ES? The Hum; ultrasound

3. The Triggers and Symptoms; what can provoke symptoms; the symptoms; behavioural disturbances; haematological (blood) effects; breathing problems; cardiac problems; cognitive changes; eyes; headaches and migraines; other symptoms experienced on the face or in the head; ingestion and digestion disturbances; joint, muscle, limb and nerve sensations; light sensitivity; psychological effects; skin; sleep disturbance, tiredness & dizziness; other reactions

4. The Biology: the living being; what effects do EMFs have on living beings? Why do only some people become ES if all people are coping with increasing EMF stress? Research problems; what different countries have found, or are finding

5. What you can do; Reducing your exposure to EMFs, in the home, in the work place, in the community; treatments and other things that can help, acupuncture, chiropractic, diet including supplements, pulsed electromagnetic field therapy, exercise, geopathic stress, grounding, holidays, homeopathy, hydration, injections, ionised environments, medication, oral treatment, osteopathy, oxygen therapy, plants, prayer and healing, protection 'devices', provocation therapy, psychological improvements, water supply; screening products; raising public awareness; campaigning and information organisations

6. The Challenges; what can the ES person do? Recognition by the general public; employment and benefits advice; Disability Discrimination Act 1995, words (or phrases) defining disability according to the DDA, mobility, memory or ability to concentrate, learn or understand; accidents, incidents and liability; policy makers abroad; normal day-to-day activities; education needs; employment needs; housing needs; transport needs

7. References – 138 references

8. Appendices:
Appendix 1- The Powerwatch response to the October 2005 Health Protection Agency–Radiation Protection Division report on Electrical Sensitivity; definition of ES; epidemiology of ES; management of ES
Appendix 2 - Powerwatch Comments on Rubin et al study, 2006
Appendix 3 - Study Flaws (Essex), Flaw counter-arguments, discussion, conclusion, Essex University study on Health Effects from TETRA radiation (2010)

What you can do if you have ES

Electrical Hypersensitivity is a reaction to environmental EMFs, which then causes physiological symptoms, leading to ill-health. Having ES is a bit like having diabetes. Once you are diagnosed, life will never be the same again. ES, in fact, is worse, because whilst diabetes only happens with changes inside your body, with ES, you are being exposed to precipitants in the environment, some of which are invisible, that you have to predict, where possible, and take avoiding action.

To return to as good a state of health as possible is a multi-stage process.

1. Early recognition of the problem is vital. This is not always easy as the symptoms provoked by EMFs are similar to many other problems, especially those which also have environmental causes such as Multiple Chemical Sensitivity (MCS), which many people with ES also have. It is common for people with ES to have other form of allergies (possibly due to the cell membrane leakage described in Section 4, causing the skin to be more permeable to environmental pollutants generally). ES is not widely recognised by the population at large, nor by the medical profession, so a recognition that EMFs may be the cause can take some time. **Remember the first signs are *warnings* of potential ES that can develop into a much worse condition if ignored. T**he longer the time between the symptoms appearing and action being taken, can result in a form of ES that is not reversible. The sensitivity once developed, if left, may never go away entirely, and at worse, can mean you have to live in an electrically isolated environment.

2. Once the problem is recognised, the most important step is to reduce your exposure to as many forms of EMFs as possible. Start with your home, and places you visit regularly. Not all of these exposures will be under your control but it is important to persist. Your body cannot repair, your immune system cannot recover, if the bombardment of your physiology by EMFs remains the same. While symptoms can diminish quickly after the exposure is reduced, it may take several days, weeks, months or even more time, for the effects to disappear.

3. Once your environment has been cleared of all possible sources of EMFs, you may then consider a range of treatments intended to boost the immune system. Because the range of symptoms experienced by people with ES is very varied, the treatments which help also vary. You may need to try a whole range before you find help for your particular range of symptoms. You may also need to shield your home or yourself from the EMFs you cannot reduce.

4. Talk to family, friends, neighbours, work colleagues, some of whom may be reacting as you are. Join a group of people who are experiencing similar situations such as **ES-UK** http://www.es-uk.info/ tel: 0845 643 9748, or **Circuit** ~ Ann Ermel, PO Box 1UZ, Newcastle upon Tyne NE99 1UZ. Getting support from sympathetic people is very important as there is very little medical acceptance of ES. One of the reasons why the medical profession is showing so little interest, we suspect, is because there is no money for the drug companies in recognising it, so GPs do not get inundated with 'cures' from the drug companies for them to prescribe for their patients.

Reducing your exposure to EMFs

We summarise below the types of EMF exposure most people are likely to encounter at home and away. We have written a whole series of free articles that go into more detail than there is room for here. The important processes are 1) identify the source(s) 2) remove or change the source, or change your dealings with it (e.g. only using a hand-held hairdryer before 7.00 p.m.) 3) protect yourself from anything that cannot be removed or changed (e.g. a neighbour's DECT phone).

Powerfrequency EMFs in homes are largely from house wiring and electrical appliances. Some homes are also exposed to high levels of magnetic fields from powerlines and substations. Radiofrequency EMFs in homes can come from appliances you have (DECT phones, wireless laptops, some alarms, many children's games, etc), and sources from outside the home, such as neighbour's WiFi and DECT phones, mobile phone masts, WiFi, WiMax systems, etc.

In order to identify which of these may be affecting you, you may need to measure the field levels by hiring instruments such as the EMFields PRO (powerfrequency) or the Acoustimeter (radiofrequency). http://emfields.org/equipment/overview.asp

Once you have identified the source, then it becomes easier to do something about it.

Hagström (2012) found that special shielding cabinets alleviated the experienced health hazards of VDU work. When volunteers used the cabinets for 1-7 years, they were able to work with their computers for a whole working day. Those who had used the shielding cabinet for 2-3 months were partially symptom free.

In a further study by Hagström (2013) 76% of 157 respondents reported that the reduction or avoidance of electromagnetic fields (EMF) helped in their full or partial recovery. The best treatments for EHS were given as: "dietary change" (69.4%), "nutritional supplements" (67.8%) and "increased physical exercise" (61.6%). The official treatment recommendations of psychotherapy (2.6%) and medication (-4.2%) were not significantly helpful. According to the present results the official treatment protocols should take better account the EHS person's own experiences. The avoidance of electromagnetic radiation and fields effectively removed or lessened the symptoms in EHS persons.

In the home

Safety regulations that electricians adhere to when **wiring a house**, only guard against electric shocks. High electric and magnetic field levels in homes due to the way the house has been wired, are common, see the article 'House wiring and EMFs', which explains how these problems can be overcome. In Sweden, but not the UK unfortunately, the government gives grants to ES diagnosed people to enable electric fields to be reduced by installing special shielded cables in their homes. A simple way of reducing electric field exposure (sometimes quite substantially), from wiring in the wall, is to move beds 6" or so away.

Poor power quality, also known as dirty electricity, refers to a combination of harmonics and transients generated by electronic devices such as computers, television, dimmer switches, and energy efficient lighting and appliances. You can reduce your exposure using micropulse filters or a mains filter strip, available from EMFields http://emfields.org/misc/filter.asp.

Metal edging strips under plasterwork can act as antennas, picking up RF fields or amplifying electric fields. They need to be earthed, as do metal wiring cover strips that are often used nowadays to hold wiring in place before a wall is plastered.

Demand switches can be useful to reduce night-time EMFs dramatically when re-wiring isn't a possibility. They sense whether or not a load is required and when current falls below a pre-set low limit they reduce the voltage on the wires to a few volts for monitoring purposes only. When they detect a low impedance from a light or appliance being switched on they restore the full mains voltage. This is only any use if you can use separate circuitry for equipment such as fridges, freezers and air conditioning etc. which need to work all night, and you do not use any appliances on the Economy 7 ("off–peak") tariff. Demand switches are available from EMFields.

You might want to have a look at the article about 'Underfloor heating', if you have considered this for, or it is installed in, your home.

Think carefully about the use of dimmer switches as they can increase your EMF exposure 'Dimmer switches'. Many people are concerned about the new energy efficient CFL lightbulbs, as they can provoke strong reactions in people with ES, see 'Lighting and EMFs'.

Check all electrical appliances. The ones with a motor, or a heater, or both, will give off the highest powerfrequency magnetic fields. Wireless appliances will give off radiofrequency (RF) fields.

Biological systems seem to respond more when exposure is lengthy. Our body can usually repair the damage done to it during the day during our night-time sleep. The repair mechanism is mediated by melatonin, a hormone produced by the pineal gland which lies in the centre of the brain from the forehead (about where the 'third eye' is). See the 3 sections of the article 'Melatonin, EMFs and health'. Melatonin is only produced at night and its production by the pineal gland is 'switched on' by darkness. The pineal gland does not produce melatonin at all during the night if it is exposed to high magnetic fields late-ish in the evening. Cows also produce melatonin at night. You may be able to find a local farmer / smallholder, who is willing to supply you with milk from a *morning* (important) milking. Other sources of melatonin if you feel peckish in the evening are oats and bananas. EMFields also sell Asphalia, a natural source of melatonin. It is important for bedrooms to be dark (and EMF free!) places so that a natural melatonin rhythm is encouraged.

Be careful of bedside lights, which, if unearthed, can give off high electric fields from the cables. (If you are not sure, you may need to measure the EMFs from them.) Make sure all appliances are at least 1 metre away from bedheads. This will include TVs, clock radios, cordless phones and base units, mobile phone charger units, transformer units for toys and games, and anything else you happen to have. Make sure all bedside lights are earthed, see the article 'Electrical Appliances', in 4 sections, and if you have a very young family member, you might want to consider the best form of wired alarm and monitoring system, see 'Digital Cordless baby monitors'.

As most people who have ES seem to react more to electric fields than magnetic fields, it is important to remember to unplug appliances when not in use. The cables from the socket to an appliance still radiate electric fields even when the appliance is not in use.

Very few ES people can use a mobile phone without side effects and they are often affected by people who use them nearby. Mobile phone use is one of the most commonly reported initiators of ES. If you get any adverse health effects from using a mobile phone, then closely monitor your symptoms and compare them with the amount of time you use your phone. The article 'Mobile Phones' in 7 sections, including a section detailing how you can reduce exposure to the radiation from mobile phones if you ***have*** to use one. If possible, stop using your phone for a while (it may take some weeks for the effect to go away altogether).

You may want to keep, or return to, a wired telephone, rather than a cordless phone, which can expose all members of the household to unnecessarily high RF fields. See 'DECT cordless phones'. Sometimes, even a speaker phone is necessary. This is not always ideal as there may be an inability of the other person to hear *brief* feedback (such as 'yes'); there may be difficulty in interrupting someone in mid-flow (there are times when this is necessary); and if the other's environment is noisy, it is difficult to break into the conversation again.

It is not clear exactly why some people with ES react to wired phones, as the emissions from the phones themselves are almost undetectable. It could be that the wires pick up 'dirty electricity' from inside the house or RF from inside or outside. An RF line filter consisting of ferrite beads and capacitors will correct for this. One person who suffers from ES has reported that if you are sensitised to a wired phone, you may get less of a reaction if you choose an instrument with very basic facilities (no last number redial, etc). He suggested that the phone chip memories, sampling at high frequencies, may be responsible for the adverse reactions.

Most homes now have computers. Unfortunately, they can provoke ES and many people with ES cannot use them without modification. We suspect it is a combination of factors, including chemicals and flicker that ES people react to, as EMFs from the front of modern PCs are very low. It is important to remember that computer monitors, especially CRT ones, give off higher fields to the side and the back, so keep your distance. Laptop computers can be different as they are usually not earthed and can therefore give off very high electric fields from the keyboard, as can PCs if you have an internet dLAN system. Many also come WiFi and bluetooth enabled, which give off RF radiation even when these systems are not being used. You need to contact the manufacturers to learn how to disable both, and it is important to remember that changes in software can re-enable them. Lap-tops and flat desk-top screens use high-frequency fields for driving the back-illumination and also can emit significant levels of radio-frequency electric fields from this and the scanning processes. As most people with a computer want internet access, we recommend wired systems rather than wireless. For details, see the article 'Computing Overview'. Work done at Bristol University has shown that the static electric field generated by monitors and TV screens attract negatively charged particles to the screen and positively charged particles are attracted in the opposite direction - towards the user. These particles may include chemicals that can trigger or perpetuate ES symptoms.

It is very important if you believe you may be ES, not to use one of the "BT Home hubs" to connect your computer to the internet, as they act as both a wireless access point (WiFi) and a DECT base unit (cordless phones) whenever they are powered. For an alternative, ask in your local computer store for a non-wireless "router" - there are a number of brands that manufacture these, and they are secure, reliable and require very little setting up. One woman reacted when her family's WiFi had first been installed. She wrote "*I changed our router back to wired internet access. I had the computers reconfigured so that they no longer sent out signals searching for WiFi and we binned the DECT phones just to make doubly sure. My husband began to notice the change in me within days and, finally, he believed me*".

Some ES sufferers find their symptoms are made worse when watching television. A change worth trying is that of ensuring that the watcher does not sit between the television set and the

aerial. He or she should sit so that they face the television and the aerial is also in front of them, in whatever way it is mounted. We see no technical reason why this should reduce the symptoms people suffer, but it worked for a sufferer from severe ES who had tried everything else. It may be that the body, as a living system somehow forms a 'loop' with the two pieces of equipment in a way that is unhelpful, biologically. One ES person could not tolerate an LCD TV but was fine with a plasma TV. They were told "*The LCD TV uses fluorescent to fire each crystal diode and plasma is incandescent*".

In the kitchen, most homes have a microwave oven as they are so convenient. All microwave ovens leak RF radiation through the door seals as the manufacturers are allowed to produce cookers that do so. Should you feel that you cannot do without one, we suggest you stay out of the kitchen whilst they are working, see 'Microwave cooking'. Other large appliances in the kitchen such as electric cookers, washing machines, cooker hoods, etc. give off high magnetic fields when working. If your are sensitive to powerfrequency fields (not all people with ES are), it is important to arrange your time in the kitchen to avoid exposure from working appliances.

The new 'smart' meters that are being installed in people's houses will add to RF exposure, especially if used to optimise electricity and gas (and almost certainly water in the future) usage. We do not know at the moment whether it will be possible to opt out of this scheme see 'Smart meters and remote reading'.

There is some evidence that dental amalgam illness may be a significant factor in many older people's electrical hypersensitivity. Mixtures of metals in the mouth (e.g. gold caps, mercury amalgam, titanium crown posts, stainless steel, etc) cause electro-chemical potentials to be set up in the mouth and anecdotal evidence suggests this may make matters worse. Removing amalgam fillings can also provoke ES.

According to the UK's Building Research Establishment, and a separate Australian study, new houses 1-2 years old can emit many times the level of volatile organic compounds as houses built just 10 years ago. The sources include formaldehyde from treated wooden floors and furniture, toxic compounds from fresh paints and solvents, and hormone disrupting chemicals from carpets and vinyl flooring. Chemical sensitivity is often a precursor to ES. Make sure when you buy soft furnishings for your home, that you refuse the chemical treatments that are offered to prevent staining. Be careful how much you use of any chemical, cleaning products, pesticides, etc. Most of these are associated with chemical and electrical sensitivity symptoms.

The American Department of Agriculture and the Food and Drug Administration carried out nearly 43,000 tests for pesticides on produce between 2000 and 2004. As a result, the Shopper's Guide was developed by Environmental Working Group (EWG) listing the "Dirty Dozen" most contaminated fruits and vegetables, and the 12 most "Consistently Clean" items www.foodnews.org. They said that consumers could cut their pesticide exposure by almost 90 percent by avoiding the most contaminated fruits and vegetables (exposing the eater to about 15 pesticides a day, on average) and eating the least contaminated instead (fewer than 2 pesticides a day).

Peaches (97% tested positive for pesticides and almost 87% had 2 or more pesticide residues) and apples (92% and 79% respectively) topped the Dirty Dozen list. Onions, avocados and sweet corn headed the Consistently Clean list, with over 90% with no detectable pesticide residues. While washing and rinsing fresh produce can reduce levels of some pesticides, it does not eliminate them. Peeling can remove some of the nutrients. Choose (local) organic wherever possible.

Underwired bras can act as 'antennas' re-radiating EMFs, including microwave radiation from mobile phones, into the body. With the genetic predisposition that some women have to breast

cancer and the overall increase in rate of breast cancer, we cannot recommend the wearing of bras underwired with metal.

One person with ES found that her continuous migraine-type headaches were entirely eliminated when she started wearing glasses with all plastic frames instead of metal ones. She thinks that possibly the metal frames were 'picking up' electrical or other forms of radiated fields. Some people recommend that silver or steel necklaces are not worn as they form a conductive loop than can capture and amplify some electromagnetic fields. If you really want to wear them we suggest you have a plastic connector inserted so that the metal does not make a complete loop. Gold seems to be okay.

In the work place

Many offices are full of electronic and electric appliances, computers, faxes, printers, photocopiers, air conditioners, de-humidifiers, electric fans, etc. Phones and burglar alarms can use microwaves. Computers are increasingly networked using microwaves. All these can make working life unbearable for the ES office worker. Steve Miller, one of the world's most renowned DJs has ES. He believes that most of the headaches people get at work are caused by electrosmog. He says *"I have spoken to friends who work in offices who have ended up living on painkillers, feeling ratty & tired, having disrupted sleep, rows at home, even the break-up of relationships."* He suggests people turn off their WiFi at home and see if it changes the way they feel.

Schools, hospitals, residential homes, shops are all full of fluorescent lighting and other equipment that can provoke idiopathic reactions in the ES person, making their tolerance level even more sensitised. Jobs such as power-line maintenance, railway workers on electrified lines, or machinery that generates high fields such as welding equipment, industrial sewing machines, etc. can provoke or exacerbate ES.

Avoid steel constructions in office equipment when building or converting. These can pick up and re-radiate EMFs and microwaves, and steel also distorts the geomagnetic field in ways which are harmful according to some investigators. Make sure all metals are bonded to the building earth (and that this earthing is functional!)

The insurance company Skandia, in Sweden, is one of several companies that have reorganised their electrical systems at work. This has resulted in a dramatic reduction in people calling in sick. 300 employees had symptoms prior to the reorganisation of the electrical systems and other measures. Today no-one is sick due to hypersensitivity to electricity and the company has established a purchasing policy for display screens and electrical apparatus.

In an office environment, keep the rooms as free from dust as possible, having a clean desk and floor. Electric fields act as a 'magnet', attracting all sorts of unwanted particles, including bacteria and toxins to the screen. It is important to keep a computer monitor screen clean using an anti-static wipe, and to avoid pollutant materials, including all chemicals (air fresheners, perfume etc., spray polish), in your office space.

Sort out cable coils. Coils produce higher fields than straight wires.

Many people with ES react to fluorescent lights, either strip lights, or CFLs. The former are common in work places. Older style fluorescent strip lights could give off high levels of RF noise and electric field levels at head height. Most recent ones seem to have removed these problems. Where CFLs are used for corridor lights, they almost always give off higher RF radiation than would be found in the corridor from a base station mast on the roof of the building.

The chemicals (especially ozone) emitted by photocopiers can trigger off ES. Many doctors who work with chronically fatigued patients and those who work in the field of environmental medicine, agree that chemical exposure is a major cause of fatigue, depression and poor concentration. Dr. R. A. Buist, author of 'Chronic Fatigue Syndrome and Chemical Overload', goes on to point out that toxins can disrupt muscle metabolism, accounting for the pain and fatigability of muscles experienced by many people who suffer from MCS and ES. Buist also notes that in many chronic fatigue patients, environmental exposure preceded the onset of their fatigue.

Drivers of electric trains are members of a group in which sensitivity can lead to very dangerous consequences. 10 - 25% of UK train drivers report 'missing time', time in which they were unaware of their surroundings. However brief this 'absence' may be, if it is at a critical place, e.g. coming up to a red light, it is possible that this could lead to fatal accidents.

Drivers of local suburban trains, underground trains and trams are subject to high levels of EMFs.

A teacher with ES manages 4 days a week, when the room lights were changed and she did not use the interactive whiteboard facility.

Whilst shop electronic tills are unlikely to be a problem for the customer, a till operator who is ES could be quite badly affected.

Many libraries use a similar technology to the RFID system, mentioned below, which uses a lower operating frequency, but a higher pulsed field level. These may prove to be a long-term health hazard for some of the staff, especially if they sit near the magnetic eraser.

In the community

MRI scanners can cause the blood brain barrier to allow toxic chemicals to crossover. The emissions may interfere with the way that chemicals are stored in the body, leading to peripheral neuropathy (stinging, burning pain, numbness, tingling and prickling of extremities). See the article 'Magnetic Resonance Imaging (MRI)'.

People who live near sources of radar such as airports or docks may react to radar emissions, as well as those who use radar as part of their employment. We have been told of sensitivity to radar sources 10 miles away.

Passengers in local suburban trains are subject to very high levels of EMFs at floor level due to the underfloor traction equipment, and sometimes by the train sides due to the passing of power from overhead cables to the wheels. ES people may want to carry a meter to determine the seat with least exposure. Research by De-Kun Li (2002) showed that high magnetic field exposure such as would be experienced in trains and trams is associated with an increased risk of miscarriage. Research reported in May 2002, by T Hondou, in Japan showed the potentially high levels of radiofrequency emissions people may be exposed to from mobile phone use in trains, which could easily lead to an increase in the number of ES sufferers.

Trains are now increasingly being equipped with WiFi for people to use their computer laptops for business or pleasure. This is making rail travel for RF sensitive ES people more difficult. Even railway stations offer online internet access for use by business passengers on platforms or in the waiting areas.

Travelling in cars can expose you to both powerfrequency and radiofrequency EMFs. As a general rule, the older and simpler the vehicle, the lower the EMFs may be, but this is only a guideline. Electric cars may be quite a problem. Tell & Kavet (2016) found electric/hybrid vehicles had magnetic field levels of up to 3.5 microtesla and electric fields up to 3 volts per

metre; these are likely to have an adverse effect on people with ES. If in doubt, when purchasing a car, take appropriate meters with you. Try a friend's car and see what may suit you. Travelling, as a passenger, in a back seat is often better for people with ES as the exposure to EMFs tends to be lower in the back than the front.

Trains, trams and planes are becoming more polluted with EMFs. With planes, the cheaper 'no frills' services may well be better. Buses and coaches may well have some of the same EMF problems, especially above wheel arches.

If you are attending for a hospital appointment, Prof Olle Johansson (an ES specialist) says from feedback he has received, scans such as MRI or X-rays do not stress the person's system too much (perhaps, some people's experiences do not tally with this), but the general hospital environment did. He recommends *"If possible, have a very exact time point of examination and stay outdoors until it is time to do it"*. Hospitals are full of electric and electronic components. Medical and support staff, in-patients, out-patients and visitors will be subjected to a cocktail of exposures. There is no answer to reducing the exposure generally.

RFID (Radiofrequency identification device) tagging is becoming more commonplace in shops as anti-theft security devices. These can be a problem for people with ES and you should avoid leaving young children in pushchairs between security pillars as these give rise to very high fields, see 'Anti-shoplifting devices in shops, libraries, etc.'

RFID systems used for controlled entrance / exit bars for housing complexes etc. use EMF to energise the identity tag that you carry. That then sends an RF signal back to confirm the user's identity. These systems can cause ES people problems. Swipe card and bar code systems should be fine.

Mobile phone masts, WiFi and WiMAX systems abound in our shopping, leisure and other facilities. Get to know your neighbourhood using EMF meters and avoid the places with the highest exposures. One ES person managed to get her local leisure centre to switch off their WiFi system when she went swimming, but, unfortunately, we suspect this level of persistence by the affected person, and willing to compromise on the part of the leisure centre management, is rare.

Treatments and other things that may help

Acupuncture

Acupuncture has helped reduce chemical intolerances and natural allergies.

Chiropractic

Chiropractic treatment has been helpful in cases where ES has been triggered by trauma, especially to the back and neck.

Diet, including supplements

Skin sensitivity (including reddening as an allergic-type reaction to EMF exposure) may be alleviated by reducing intake of some fish and wines which contain histamine and the celery family which contains skin sensitisers.

MSM (a form of organic sulphur) can help the body to increase its level of dihydroxyepiandrosterone (DHEA) dramatically in about 50% of patients, according to Dr. Norman Shealy. DHEA is a helpful chemical in humans which is found at low levels in a

depressed immune system. Vitamin C taken in addition to MSM increases the level of DHEA in about 70% or so of people.

Have a trace element test, which your GP can arrange for you. ES people can be low in zinc, copper, selenium and magnesium. Low selenium levels have been linked with some allergies. Increased selenium intake may be protective, though care must be taken as large amounts are toxic. Good sources of selenium are whole grains, brazil nuts, rice, kidneys and oily fish.

Daily iodine has been reported as being very helpful.

Since 1940, the minerals available from food in the diet has gone down dramatically. Iron content in meat has reduced by 47%, milk 60%, cheeses and cream 50%, vegetables 27% and fruit 24%. Copper has fallen by 60% in meat, 76% in vegetables, 20% in fruit and has almost disappeared from milk. Magnesium fell by 21% in milk, 24% vegetables, 16% fruit and about 10% in meat. Between 1978 and 1991 vegetables lost 57% of their zinc, and fruit 27%.

Evening Primrose Oil can help with atopic conditions (conditions involving a generalised allergic response), stimulating the immune system. A high dose, 8-12 capsules a day, is necessary to make up for long periods of time with a faulty enzyme. Dried lemon balm leaves have been shown both to increase calm and to enhance the ability to perform difficult timed memory tasks.

Vitamin D supplements helped reduce muscle ache in one ES sufferer. This may be because people with ES tend to go out less, particularly without some form of RF protection and get less exposure to sunlight, our normal source of vitamin D.

Walnuts are rich in melatonin (Reiter 2005) and so is Purslane (Simopoulos 2005). Other foods, like oats, bananas, rice and ginger also contain small quantities. Pineapples, oranges and bananas increased serum melatonin concentrations (Sae-Teaw 2013).

Chewing root licorice has been found to help some people who suffer from ES.

Pulsed electromagnetic field therapy

A 1-week course of pulsed electromagnetic field therapy, consisting of one hour's treatment per day, resulted in a significant reduction in the mean number of reactive foods (Monro & Puri 2014).

Exercise

Strenuous physical exercise is believed, by some, to depress the immune system, but moderate exercise, such as Tai Chi, may have the opposite effect. Studies have found that regular Tai Chi helps people with diabetes (Song 2009), cardiovascular problems (Yeh 2009) and blood pressure reduction (Yeh 2008). As many people with ES have compromised immune systems, any way of improving this may well be worth a try. **Tai chi** was also found to increase memory T cells (a type of immune cell) by 50%, when practised for 45 minutes three days a week for 15 weeks. **Qi Gong** (whatever the spelling) has been helpful for some ES people. There is clearly an immune system interaction, the dynamics of which are, as yet, poorly understood. One person finds her practice of **Aikido** three times a week helps a lot.

Geopathic stress

Sleeping on several different lines of geopathic stress are implicated in the development of serious illness. The edge line of an underground stream is associated with increasing the

susceptibility of biological systems to EMF radiation. Dowse where you sleep to ensure that your bed is not on one of the earth energy lines associated with ill-health, and move your bed if this is the case. If you would like a full-house assessment for geopathic stress as well as EMF exposure, Roy Riggs 01273 732523, is a geopathic energy surveyor, who is knowledgeable about EMFs.

Grounding

The simplest way of discharging the static electricity accumulated by the body is walking outside, preferably in bare feet. Carpets made of natural fibres will not result in the high static buildup caused by walking on carpets made of man-made materials.

Another way of reducing the effects of exposure is by attaching a wire to ground from a copper bracelet. However, this is also very likely to increase your exposure to electric fields, as you will become the quickest 'path to earth' for any emitters of electric fields you are near. This may well affect the physical well being of some ES people.

Holidays

You might want to check exposure in a proposed holiday destination before booking. Orange has produced a coverage map of the UK, where by entering the postcode you can see what level of RF exposure you may expect. http://search.orange.co.uk/ouk/portal/coveragechecker.html

A luxury hotel company has come up with a way to help guests to relax: a switch that kills the internet. A silver switch next to the beds in the Villa Stephanie spa resort in Baden-Baden (€1,115 Euros per night) activates a copper grid in the walls to block all wireless internet signals. As well as the copper grid, the rooms have a special coating to block 96% of wireless signals. So far around half the people staying have opted, at some point during their stay, to kill their internet. As well as the Villa Stephanie, the Oetker Collection also owns Le Bristol in Paris, The Hotel Du Cap in Cap d'Antibes and will open a renovated Lanesborough hotel in London (Financial Times June 2015).

Homoeopathy

Some homoeopathic remedies have been devised specially for people who are ES, and mistletoe seems particularly helpful. Your local homoeopath may be unfamiliar with these particular remedies, but could find out from the Homoeopathic Association. In the UK, Dr Jean Monro of the Breakspear Hospital, a private hospital in Hemel Hempstead, 01442 261333, also prescribes for the electrically hypersensitive.

Homoeopathic hospitals and special units for patients with ES should take a more sensitive approach to the problem, if ES is to be recognised. The environment in which homoeopathic remedies are made and stored need to be designed to avoid the remedies being de-potentised by high magnetic fields.

Professor Luc Montagnier, a French virologist and Nobel prize winner has made a discovery about water that could explain why homoeopathy might be helpful. He discovered that solutions containing the DNA of viruses and bacteria *"could emit low frequency radio waves."*

Hydration

Some ES sufferers have reported varying degrees of relief of their symptoms from drinking plenty of water. Most people suffer from a degree of subclinical dehydration. Tea and coffee both contain diuretics, so you excrete more liquid than you take in. A man should drink 2 litres of still

(not fizzy) water and a woman 1½ litres (as well as other drinks). Feeling thirsty is a symptom of *extreme* dehydration. Feeling tired is a symptom of subclinical dehydration. Many people with ES find that putting water on the face helps with some degree of immediate relief. As an addition to this, try a hypo-allergenic moisturising cream. It helps with skin re-hydration, and may improve skin symptoms and / or general well-being.

Organic seaweed in a warm bath may help, followed by moisturising cream.

Injections

Metal needles can act as an aerial for other electrical equipment, making the injection more painful. A plastic tube inserted into the canula avoids this.

Ionised environments

Most people feel better in a negatively ionised environment, such as is found naturally in mountainous areas, and by rivers or lakes. The use of most electrical equipment results in positive ions being generated. You might choose to buy a negative ioniser which will help restore the ion balance in your home or workplace. Be careful when you decide to buy, as some contain a cheap transformer, which can give off high electromagnetic fields nearby, undoing much of the good of the negative ion effect.

Medication

Some people with ES have found limited symptomatic relief from the use of neurontin, an enzyme used to treat epilepsy (and trigeminal neuralgia), especially when their symptoms are also related to chemical and food sensitivity exposures. Dosage is approximately double what is usually prescribed for anti-seizure use.

'Promazin' helped an EHS sufferer cope with the pain she experienced when exposed to EMFs. It is a drug that is also prescribed for radiation sickness.

Oral treatment

Bergdahl (1998) investigated 28 patients reporting symptoms, including oral ones (craniomandibular dysfunction) allegedly caused by electricity or computer monitors. The conclusion was that some of the symptoms could be helped by treating dental diseases.

Osteopathy

Osteopathy has helped the immune system of some people with ES. Cranial osteopathy may also improve cerebrospinal fluid flow in the cranium.

Oxygen therapy

One person was unable to cope with her ES symptoms without access to fresh air at all times. Oxygen administered for three days after an operation, reduced her need for outdoor air for several months.

Plants

Plants (NASA suggests spider plants, Boston ferns and peace lilies amongst others, and these are easy to grow), are excellent for cleansing the air of formaldehyde and other chemicals in small quantities, even in sealed containers. Boston ferns thrive in areas where there is less light (where there is no convenient window space), as do most ferns (Wolverton, 1996). Plants in a room also release phytochemicals that suppress mould spores and bacteria by up to 60%, when compared with a room with no plants.

Prayer and healing

Prayer has been felt to be effective. We have had some good reports on the effects of healing on people suffering with ES. Sometimes it eliminates symptoms entirely and sometimes ameliorates them significantly.

A paper by Schwartz & Dossey (2010) suggests that the usual assumptions concerning blindness and randomization that prevail in studies using the pharmacological model must be reappraised. Experimental data suggest that a nonlocal relationship exists among the various individuals participating in a study, one which needs to be understood and taken seriously. We argue that it is important to account for and understand the role of both local and nonlocal observer effects, since both can significantly affect outcome. The paper finally suggests that if these effects occur in intention studies, they must necessarily exist in all studies, although in pharmacological studies they are often overshadowed by the power of chemical and biological agents.

Protection 'devices'

Many devices are available on the market that claim to help protect against or neutralize the EMF / ELF or other output from electrical appliances such as computers, and microwave sources such as mobile phones. With most of the products we have seen, and occasionally taken apart, there is no scientific foundation for their claims. The pseudo-scientific literature that is associated with the product is usually flawed and completely useless. The only thing you can be sure of is that the manufacturers see a market for the device that will create money for them.

There is a possibility that ***some*** of these devices may have a very subtle effect on the body's immune system, and help the person using the device to be able to resist the damage from EMFs by improving their immune function. However, the effect is likely to be very subtle and at the moment we do not have the scientific instruments to measure such subtle changes in body dynamics. Techniques such as kinesiology may be able to detect subtle energy changes, but the accuracy is only as good as the competence of the practitioner. People vary greatly, due to inherited factors, and many unquantifiable characteristics. Subtle effects on the immune system may make a significant difference to the well-being of many people.

We suggest that if you are tempted to try one of these devices, obtain it on a money-back if not satisfied arrangement. If it works for you, keep it; if it doesn't, return it.

Provocation therapy

The use of provocation therapy has been considered a key element in the treatment of ES.

Psychological improvements

Learn techniques for stress management, because stress makes symptoms worse, even when it was not part of the initial exposure that induced the problem. A report that visualisation (often

used as part of stress management techniques) can reduce symptoms is further evidence of psychological changes which effect physiological improvements.

Cognitive behavioural therapy may have beneficial effects in some people with ES. Various studies [Andersson 1996, Harlacher 1998, Hillert 1998] have shown mixed results, but it could be worth a try.

An interesting anecdotal example of the mind-body interaction that encourages us to look at all possible ways of alleviating difficult-to-treat syndromes is the following: A group of people with allergies were asked to come off all allergy medication for three days before watching the Charlie Chaplin film Modern Times. Before, during and after the film they were exposed to various allergy-causing substances. Their allergic responses were significantly reduced after watching the film. When the same experiment was tried with a group of people watching a weather forecast, no improvements were detected. Scientists believe that laughter stimulates the production of endorphins, feel-good chemicals which also boost the immune system. Laughter – even the anticipation of laughter – shifts our internal chemistry measurably, reducing stress hormones and increasing the number of natural virus-killer cells available to fight diseases from colds to cancer (Beck 2003). The amount we laugh appears to reduce as we get older. The average 6-year-old laughs 300 times a day compared to a grouchy 47 laughs a day in adulthood. Women generally laugh more than men.

Listening to music you love encourages a profound and positive emotional experience which, in turn, generates the body's production of hormones and chemicals which protect against disease. An ES sufferer suggests music with a 4/4 rhythm, the natural earth pulse.

Water supply

For ES people who are also chemically sensitive, it is important to filter water that you drink. In many areas, underground water pipe supplies are run in parallel with electricity supplies which results in the water being imprinted by 50 Hz. Putting a small permanent magnet underneath the filter jug should help remove this. If you use an electric kettle to boil water, which you intend to drink, you should also place the small magnet underneath the mug or cup for a couple of minutes to remove power-frequency imprinting effects induced by the electric current in the heating element. For appropriate magnets, try Electromagnetic Products Ltd. 01495 752122. If you decide to filter your incoming water supply, do not have one that uses reverse osmosis filters as they lead to 'hungry' water, which will leach minerals necessary for health from your body, which you will then excrete in urine.

Screening products

EMFields supplies a range of products www.emfields.org, most of which have been scientifically tested to reduce exposure from EMFs. They can help protect your home, or may offer personal protection. Some of the products act at a more subtle energy level and they are stocked because of the enthusiasm with which they have been recommended by ES sufferers. For specific details, see our articles 'Powerfrequency protection for you and your family'; 'RF protection for you and your family', etc.

Raising public awareness

One of the things you may want to do, is join in with others to raise public awareness of the ES condition, and of the plight of those who suffer. It is hoped that this will go some way towards reducing general exposure and getting help for those who are affected.

Nantes, France, November 2009

Campaigning and information organisations

ElectroSensitivity UK (ES-UK) www.es-uk.info – UK charity which aims to provide unbiased and balanced information to help those who have become sensitive to mobile and cordless phones, their masts, WiFi and a multitude of common everyday electrical appliances. ES-UK operates a telephone helpline. It also sends out a very informative 2-monthly newsletter which is especially useful for those who do not have access to the internet.

ElectroSensitivity.org website www.electrosensitive.org – UK website set up by Troy Knight who became electro-sensitive. Provides useful information about ElectroSensitivity including reference to the Essex studies.

A new group for teachers at schools and lecturers at colleges and universities who are suffering from ES or have lost their job because of ES, often through the introduction of WiFi into their school or college, is being formed. The aim is to provide mutual support and inform, if possible, relevant groups like education providers and unions. Contact esteachers@btinternet.com