Electrohypersensitivity (EHS) in the Netherlands – A Questionnaire survey

by

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Contents

Abstract

1. This questionnaire was completed by 250 electrohypersensitive (EHS) persons in the Netherlands over a 3-year period, who contacted the EHS Foundation on their own initiative. Self declared health problems were recorded along with the sources of electromagnetic fields (EMFs) –if known- that caused the health effects.
2. EHS occurs in most age groups, from teenager to 80-year olds
3. Most persons seeking help and advice are female
4. There are several factors -environmental as well as psychological- that modulate both onset and intensity of EHS symptoms
5. We found no specific EHS distress marker shared by all responders. Individuals develop their personal range of stress symptoms and complaints varied greatly. 70% of respondents suffered from chronic fatigue, headache, concentration problems and other psychosomatic ailments. Somatic problems included impaired vision, smell and hearing as well as skin problems and pains in joints ands muscles.
6. Several electrosensitives have a history of diseases ruining body or mind and many are influenced by environmental factors such as odours, UV light, pollen, and allergens. Some report a burnout, posttraumatic stress disorder or similar environment and emotion-related disabling condition.
7. EMF sources reported to cause or maintain EHS symptoms vary greatly. No specific source is mention by all persons, although the use of household equipment such as Dect phones, WiFi, TV, PC and most other modern electronic systems induced problems with at least half of the respondents. The incidence appears to increase

during last year. External EMF sources such as GSM/UMTS and TETRA Base stations played a minor role. AC magnetic fields emitted by underground electricity cables were recognized as a new source of concern.

8. Living in an apartment with several neighbours is a risk factor due to EMFs travelling through wall and floors
9. Three-quarter of the respondents have sought conventional medical advice, usually with little success. Half of the respondents visited alternative practitioners, also with little satisfaction. Ten percent of them claim to have recovered fully whereas 42% report being only moderately healthy, although they still needed help with EMF reduction.
10. 38% of the respondents are still at work and maintain a partial of full time position
11. Most respondents consider themselves to have an emotional character.
12. Some report that other members of the family also show sign of EHS, indicating that there is some sort of hereditary factor involved in acquiring the oversensitivity for EMFs.
13. It is speculated that the personal stress system is a key factor determining how health problems are perceived and dealt with.
14. It is argued that provocation experiments should be designed such that personal differences in EMF perception and nature of health effects should be taken into account.

Introduction

Why a questionnaire?

Until recently, information about electrohypersensitivity (EHS) was non-existent in this country and there was no interest in this matter by the government or health agencies. Electrosensitive persons had no place to go for instructions or help to alleviate their problems. This questionnaire should provide basic information about the complex manifestations of EHS.

Early signs of electrohypersensitivity arose in the Netherlands around 1985. The phenomenon was unknown at the time and the press had no interest, which hampered the spreading of the message. In Sweden, a leading country in the implementation of digital techniques discussions had started already. Electrosensitives had grouped and started an informative website, www.feb.se . This site was probably the first and sole source of information, presenting material that was most refreshing for those who sought information on EHS. The English section of this site was a most useful source of information for some years and encouraged others to take EHS serious and do something about it. The incidence of EHS in Sweden was about 1,5% of the inhabitants of Stockholm (Hillert 2002) and there is no reason to suppose that such a figure would be much lower in the Netherlands. We hope this document will initiate public debate on that matter.

We established an informal Working group on EHS (WEO) in the Netherlands in 2001 (www.electroallergie.org), which in 2007 developed into the Dutch EHS Foundation (www.stichtingehs.nl) . The aims were to assess the EHS problem through close contacts with electrosensitives and to extract from them their knowledge and insights about:

1. The personal experience: which health problems are experienced?
2. Is there a common ‘marker’ symptom characteristic for the condition of EHS?

3. Is there a common risk factor in the form of specific electromagnetic fields from appliances and installations?
4. Their search for medical or paramedical help or from alternative (complementary) practitioners.

We envisaged that such knowledge would be useful for:
1. Electrosensitive people can be helped to understand the complexity of their EHS problem. We can give better advice on EMF management strategies.
2. Provocation experiments to assess people's ability to detect the presence or absence of EMFs can be designed better. The conditions under which groups or individuals are subjected to EMF exposure and questioned about their subjective experiences should be redefined. Attention should be paid to both high- and low-frequency EMFs.

The results of earlier versions of this questionnaire –based on 200 respondents- have been published before (Schooneveld and Kuiper, 2006).

The phenomenon of EHS has been reviewed extensively by Johansson (2006) and there is a wealth of information as to the effects of EMF on living tissue (Carpenter and Sage, 2007), by both biophysical (Swanson and Kheifets, 2006) and biochemical mechanisms (Lai and Singh, 2004).

Defining EHS

Healthy people not affected by a hypersensitivity for EMF sometimes express scepticism as to the nature of EHS and the very existence of such a medically unexplained health condition. As the WHO phrases it:

"EHS is characterized by a variety of non-specific symptoms, which afflicted individuals attribute to exposure to EMF. The symptoms most commonly experienced include dermatological symptoms (redness, tingling, and burning sensations) as well as neurasthenic and vegetative symptoms (fatigue, tiredness, concentration difficulties, dizziness, nausea, hart palpitation and digestive disturbances).The collection of symptoms is not part of any recognized syndrome.
EHS resembles multiple chemical sensitivities (MCS), another disorder associated with low-level environmental exposures to chemicals. Both EHS and MCS are characterized by a range of non-specific symptoms that lack apparent toxicological or physiological basis or independent verification. A more general term for sensitivity to environmental factors is Idiopathic Environmental Intolerance (IEI)*, which originated from a workshop convened by the international program on chemical sensitivity (IPCS) of the WHO in 1996 in Berlin. IEI is a descriptor without any implication of chemical aetiology, immunological sensitivity or EMF susceptibility. IEI incorporates a number of disorders sharing similar non-specific medically unexplained symptoms that adversely affect people. However, since the term EHS is in common usage it will continue to be used* here"(WHO Fact sheet #296, December 2005).

This is the formal way of looking at the problem. The EMF-affected individuals have a different view: they simply know –often by experimentation- that certain pieces of electrical equipment, installations or facilities make them sick. Switching these items

off or lowering EMF exposure by shielding or increasing distance solves most of the problems. It is as simple as that. The EHS Foundation helps them finding out which appliances are most disturbing and what to do about it.

We learned in a early phase that specific attention should be paid to EMFs of extremely low frequencies (ELF). Recently, the World health organization (WHO, 2007) published a monograph in which interest in ELF fields in encouraged.

Procedure

As the WEO working group and the EHS became more widely known, well over on-thousand electrosensitives contacted us for advice and support. They were handed the questionnaire before being admitted as a member. Their early answers formed the basis of this enterprise. As our insights grew, irrelevant questions were deleted from the next questionnaires issued, new questions were incorporated. Our major revisions brought us to the list presented here. Most people were contacted by one of our staff for an in-depth interview. When there was no hesitation as to the state of electrosensitivity, their data has been used for this evaluation.

In the original questionnaire, 38 major questions were presented, with 284 possible answers. Actual numbers of responses are given along with the percentage or choices made. Not all questions are presented here because they were personal and not of statistical relevance although answers were highly relevant for assessing the individual's circumstances.

The data from 250 questionnaires was collected over a 3.5 year period, from January 2003 to summer 2007. Ages and some other data reflect the situation at the time of answering the questions. There was a shift in the assessment of -for instance- the EMF hazards experienced, health effects mentioned and assistance of the alternative therapists sought. No statistics on such trends are available at this point.

The forms to be completed had ample space for additional comments which did not fit the pre-programmed answering boxes. These comments were valuable to us because they reflected the human person behind the answers given. Their views were not only essential for re-editing questions in following issues of the questionnaire, they also made clear how the tremendous variations in perceived danger and bad health was caused or dealt with. Several of the points made in the discussion were derived from this background information not found in the Appendix tables. The data actually given in the tables more or less speaks for itself. It is the interpretation that counts.

Discussion of the data in the questionnaire (see Appendix)

Individual experiences

The tables in the questionnaire show that EHS affects broad categories of people (all age groups, gender, and professions), that a broad variety of EMF radiating equipment and machinery is causing problems, and that a wide variety of health problems is reported.

It is this variation that causes disbelief among people who are not themselves electrosensitive. Stories of EHS sufferers would be incoherent, EMF energies reported to be disturbing would be too small to hold responsible for whatever known biological effect on humans. There would simply be no well-established biological mechanism

explaining such a degree of sensitivity. Indeed, we did not find any specific marker for EHS among respondents. It is also true that other diseases or ailments are characterized by similar health problems. Some developed a hypersensitivity for odours (MCS patients), hard sounds (tinnitus, hyperacusis), (UV) light (CPLD), allergens (allergies), food additives, chemical intolerances, etcetera.

Each person is unique

In-depth interviews after the completion of the questionnaire indicated that most people have their own story: a given EMF source usually evokes a standard (set of) reaction(s) and this cause-effect relationship is remarkably constant. The large variety in symptoms recorded as a group effect does not apply for the individual. The impression emerging from these interviews is the following:
Some persons have become electrosensitive and respond to some specific EMFs in their environment and show some of the possible health effects induced by their personal stress system (see Figure 1)

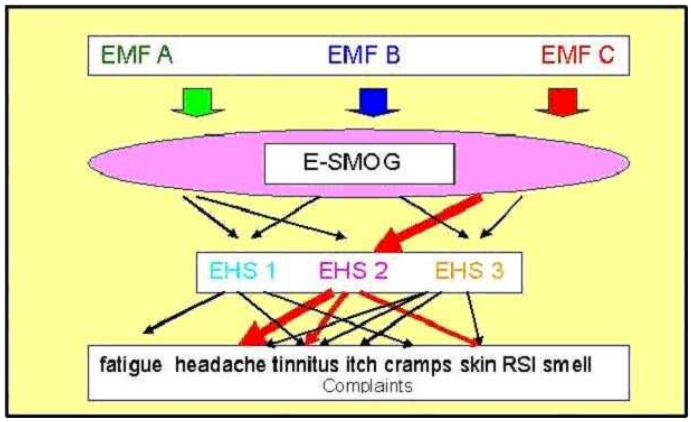

Figure 1. Schema expressing the very personal relationship between EMF stimuli and health effects evoked. Every EHS person (1, 2, and 3) recognizes certain field 'components' in the electrosmog mixture around them. The stress system thus activated generates a mixture of physical ailments (follow the red arrow). Every person develops an unique pattern of health complaints.

The interviews also revealed that the individual responses are quite predictable and reproducible. Patterns may change somewhat in the course of EHS 'development' but within a timeframe of a year or so the response is stable. In short: a given EMF stimulus usually induces a predictable type of health effect and after a predictable delay. The speed of response differs among individuals. Exposure to exceptionally strong fields and EMF of a hitherto unknown quality may generate a more rapid and powerful effect.

One of the main problems is that many people with EHS symptoms have no idea which type of EMF –if any- is specifically annoying to him or her. This is caused by the length of time usually elapsing between EMF exposure and health effect: several hours is not unusual (Schooneveld and Arends-Zimmermann, 2006). One simply does not see the connection.

Search for a specific EHS marker

The point never contemplated so far is that EHS is a problem of the individual, not of a group. We all tend to expect the classical picture of an illness: much like measles would make the skin of children appear reddish, and influenza would elevate body temperature, we expect a similar marker for EHS. An obvious marker apparently does not exist so far and we should perhaps stop looking for physically recognizable signs of EHS. Future research on cell physiological processes will probably reveal what makes

certain people perceive EMFs that go unnoticed by others (Carpenter and Sage, 2007). We saw that most respondents indicated that they belong to the emotionally more 'sensitive' part of the population. It seems reasonable to suggest that the basic nervous mechanisms for handling stress situations are responsible for the stress reactions shown. And stress is something very personal; stress responses may differ greatly among individuals.

Most electrosensitives who approached the EHS Foundation have had their own experiences in cause-effect relationships: there is only a limited number of annoying EMF sources (sometimes a single one) against which their hypersensitivity condition has been evoked. Health complaints include only certain symptoms (sometimes only headaches, pain in the neck or the like). Usually there was an increase in sensitivity over the time as well as an increase in the spectrum of disturbing equipment

Common risk factors

The data in the tables and the side-remarks of the respondents indicate that EMFs from certain sources are to be considered as serious risk factors. This is particularly true for:

1. Outdoor EMFs that cannot be controlled by citizens, such as from GSM/UMTS base stations, underground and overhead power cables, and railway lines;

2. Indoor EMFs that are under personal control, such as (1) all equipment intentionally radiating high-frequency fields (digital Dect telephones, WiFi, Wlan and other wireless communication systems; (2) equipment –unintentionally radiating low-frequency EMFs- powered many hours a day (ventilators, refrigerators), electronic items employing digital power supplies such as computers and audio equipment, and all power tools; above all: electric blankets; (3) the electricity net spreading electrical fields at all times.

3. EMFs from neighbouring dwellings (from TV, PC, washing machine, emitted through walls and floors);

4. EMFs in transport vehicles (automobiles with ignition motor, diesel motors with electronic fuel injection system; certain trains, airplanes.

It is remarkable that the people's major concern is not the GSM/UMTS mast in their vicinity, but rather regular electric and electronic tools in the household or office. In other words, although high-frequency sources may be a threat at short distance, most annoying are the equipment and utilities found in most households. Dect phones, personal computers and TV are among the most-disturbing items. The possibility that high- and low-frequency EMFs interact and reinforce each other in biological effects should be explored.

Health problems caused by other factors

EHS symptoms are regularly accompanied by other illnesses (Grant, 2000; Hobbs, 2003; Nordström, 2004). Over one-half of the respondents reported that they were at one time diagnosed as suffering from multiple chemical sensitivity (MCS), chronic fatigue syndrome, fibromyalgia, burnout, or other disabling psychosomatic ailments. Several other respondents were reported to be sensitized by environmental factors like odours, sunlight, pollen, chemicals, medicines, nutrients, food additives, etcetera.

This would mean that the physical condition of the individuals was generally poor; the question is therefore whether EHS is the consequence of poor health, or the cause of

it. Most respondents answered that EHS came first, whether or not followed by other 'sensitivities'. This point should merit closer attention in following queries.

In conclusion, these people seeking information and help from us were already in rather poor physical condition and often had insufficient mental power to do something about their condition or circumstances. Those who saw their problems in time could have taken measures to minimize exposure to EMFs by different forms of field management. This sometimes went as far as moving to another less stressful job or to a cleaner environment, thus enabling them to adopt a satisfactory life style. Some reported, however, that their electrosensitivity never really abated and that they should always be careful to avoid unnecessary exposure.

Medical help sought

Three-quarter of the respondents have visited a physician or one or several medical hospital specialists for help and advice. Very rarely did the person receive support that showed that the consulted person made a correct diagnosis. It was regularly admitted that there was no solution other than having a good sleep or taking a tranquillizer. It was also not uncommon that one was send to alternative practitioners like homeopath, acupuncturist or –as was reported- some 70 other types of alternative (‘complementary’) help. Rarely with any real success and sometimes patients' health was permanently damaged, as far as we could ascertain. They needed our help.
But electrosensitives hardly have any choice when their condition is not recognized and appropriate measures taken. We conclude from their information that the only effective protective strategy is avoiding the disturbing EMFs. This may require shielding of living quarters against high-frequency fields from outside or from neighbours, shielding apparatuses or electric installations, or moving to a cleaner environment.

Exposure standards

None of the EMFs found in this study had a field strength that came anywhere near the exposure limits formulated by the International committee for non-ionizing radiation protection (ICNIRP). (Perhaps with the exception of the fields radiating from the handsets of GSM of Dect phone systems). Field measurements done to characterize the fields that were found annoying, all were several orders of magnitude weaker than the ICNIRP limits. Similar findings were reported by Sage (2007).

Therefore, we usually adhere to the exposure limits recommended by German specialists, the so-called SBM2003 norms (www.maes.de). Even these values are in some cases too tolerant, we suppose.

General discussion

Related questionnaire surveys

Several other investigators have undertaken to collect data on self-reported annoyance from EMFs and resulting health complaints: Grant (2000), Hillert (2001), Carlsson et al. (2005), Röösli et al. (2004), Huss and Röösli (2005), WHO (2007). It is of interest that data from electrosensitive people in different countries is essentially similar. Most-reported EHS symptoms are fatigue, headache, skin problems etcetera. Yet, the early

experiments in Sweden indicate a much higher incidence of skin problems than later studies (Hillert 2002, Stenberg e al. 1995). This could be the consequence of exposure of office workers to early CRT type PC monitors which produced stronger EMFs than later monitor types Wall (1995) and Nordström (2004). In short, the self-reported problems encountered do not differ markedly over recent years, and the present report on the situation in the Netherlands forms no exception to that.

The British organization Safe Wireless Initiative organizes a questionnaire survey on the prevalence of the EHS condition in the UK, N-Ireland and the Channel Islands in the short time-frame of November 2007 (McKinney and Crofton, 2007). The questions asked resembles our questions. It should be interesting to see whether region-specific differences in EHS problems become apparent.

Provocation experiments

Electrosensitives are all too eager to communicate on their problem but usually find few listeners, and critics deny the existence of EHS. Several provocation experiments in recent years failed to demonstrate that electrosensitive volunteers can actually substantiate their claim under controlled and double-blind laboratory experiments (Rubin et al., 2006; Seitz et al., 2005). We now understand why these experiments were negative: more attention should be paid to the degree of variability of personal responses found here.

There have been quite a few studies in which EMF sensitive and non-sensitive volunteers were exposed to high-frequency EMFs, signals mimicking those of GSM or UMTS transmitters. The question was whether EHS people could demonstrate –under controlled conditions- that they could ‘feel’ whether the transmitter was ‘on’ or ‘off’’. The outcome was mostly negative and authors like Rubin et al. (2006) and others conclude that there was no evidence for an EMF-feeling talent. The present data show that the situation is more complex: not all EHS people will react to high-frequency EMFs. In future experiments, more attention should be paid to the specific conditions under which EHS can be demonstrated by individual volunteers.

Individuals have their personal repertoire of annoying EMFs detected and stress symptoms. We propose that there is a mismatch between people's frequency-dependent sensitivity and frequency (and perhaps other physical parameters) of the fields presented in those experiments. Also the evaluation methods may be irrelevant. Exposures are usually of a rather short duration, whereas people's reaction to field exposure may well take several hours to a day.

Therefore, it seems essential that volunteers participating in such studies should be selected with care and questioned in detail about their personal experiences. Exposure conditions should be adjusted to those individual preferences.

We now know that persons may be sensitized for only certain RF fields or even for ELF fields, or for a mixture of certain frequencies. Certain persons claim erroneously that their health is threatened by exposure to EGS/UMTS transmitters. In several cases we examined their living quarters and found that they were in fact (also) sensitive to ELF fields in their households. Measures to reduce those fields took away most of their complaints.

Questionnaire as a screening tool for volunteers

Eltiti et al. (2007) developed a questionnaire as a screening tool to be used for identifying individuals who are sensitive to EMFs. This EHS screening tool includes a symptom scale providing an index for both the type and intensity of symptoms. Eight subscales were distinguished: for neurovegetative, skin, auditory, headache, cardiorespiratory, cold related, locomotor and allergy related symptoms. Given the fact that there is no objective diagnostic criterion for classifying someone as EHS, the statistical weighing of people's self-reported sensitivity should substantiate their EHS claim. The subscales distinguished in their paper roughly correspond to the health problems recorded by us and also the incidences are not too different.
We originally set out by asking for the degree of annoyance caused by known electronic equipment, but the answers received were so much influenced by the people's anger or expectations that we stopped asking for such data later on.

Our objectives were different. People came to us on their own initiative, to see someone who would listen to them and who took their problems seriously. Some knew perfectly well which piece of equipment was annoying them and that avoiding the EMFs surrounding them solved the problem. But most of them had only a faint idea what their problem was. Consecutive personal contacts were usually helpful in finding out whether EMFs or instead other environmental or internal factors were causing their health problems. The elimination of EMFs -for instance in the clean havens we exploit- were usually effective in regaining health. But not so if other factors were still in operation that just caused similar symptoms.

According to Eltiti et al. (2007) people with EHS-like symptoms –not caused by EMFs- should be disqualified as suitable test persons. As we see it, it is the other way round. There is certain proportion of citizens which are more 'sensitive' that others and develop hypersensitivities for one or more of the environmental factors that go unnoticed by 'ordinary' people. Apart from EMFs, such factors may be smells, UV light, pollen, allergens to mention a few. We saw that a surprising number of our EMF sensitives who report to simultaneously suffer from e.g. burnout (16%), multiple chemical sensitivity (15,6%), fibromyalgia (13,6%), chronic fatigue syndrome (13,2%), or a combination of these. The health problems of all these ailments are quite similar to those of EHS.
Rather than omitting such multiple-hit persons from our lists, we think that their multiple-factor sensitivity is one of the problems in several of our members. Questionnaires should thus pay particular attention to this group. 'General sensitivity' – however to be defined- seems to be a factor facilitating the onset of hypersensitivity for both EMF and other environmental factors.

Recommended procedure for volunteer selection in provocation experiments

This observation has repercussions for the selection of volunteers needed for testing the action of specific EMF frequencies on electrosensitive persons. Experiments should focus on the specific frequency as indicated by the person in question. He or she may know nothing about frequencies but can usually mention the piece of equipment that causes ill health. The experimenter should in these cases assess the specific frequencies emitted by this item and offer this frequency in test situations to evoke the correct kind of response from this person. It is irrelevant testing high frequency transmitter signals to those being sensitized for e.g. kitchen machinery and vice versa. It is quite possible

that much of the confusion in the scientific literature is caused by their ignorance of frequency-dependent nature of personal responses.

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Appendix
The questionnaire data

A. General statistics

A1. Number of questionnaires retrieved: 250

A2. Age of respondents at the time of completing this form:
242 respondents

	Response percentage
19 and younger	0.4%
20 - 29	5.0%
30 - 39	8.3%
40 - 49	24.5%
50 - 59	28.2%
60 - 69	20.3%
70 - 79	7.1%
80 and older	6.2%

N.B. Average age of all participants 52.5 years

A3. Gender
250 respondents

	Response percentage
Women	68%
Men	32%

A4. When did the EHS problem start?
177 respondents

	Response percentage
As a child (up to 14 years	6.8%
As a teenager (15-19 years)	12.4%
As an adult (older than 19 yeas)	80.8%

A5. Are you still maintaining a job position?
162 respondents

	Response percentage
Yes, a full time job	37.7%
Yes, working part time	20.3%
No	42.0%

A6. What are the specific causes of your EHS problems?
164 respondents

	Responses
Exposure to electromagnetic (AC) fields	81
Exposure to GSM/UMTS transmitters	69
Exposure to additional psychological stress situation	46
The installation of a Dect telephone at home or with neighbors	45

Moving to a new home	38
Installation of a Blue tooth system at home	26
Installation of a wireless internet modem/router	25

B. Health problems reported

Medical history ----------

B1. Which of next medical treatments induced your EHS condition?
36 respondents

	Responses
Result of a hospitalization	18
Anesthesia	14
Regular medical treatment	14
Orthodontic treatment	14
MRI scan	5

B2. Which diseases or illnesses contributed to your current problems?
114 respondents

	Responses
Burn out	40
Multiple chemical sensitivity (MCS)	39
Fibromyalgia	34
Chronic fatigue syndrome	33
Repetitive stress injury (RSI)	19
Illness of Pfeiffer	14
Metabolic diseases	13
Sick building syndrome (SBS)	9
Post traumatic stress syndrome (PTSS)	8
Illness of Sudeck	8
Alternative therapists	6
Post traumatic dystrophy	5
Illness of Lyme	5
Chronic polymorphic light dermatosis	3
Chronic Fatigue Immune Deficiency	1
Gulf war syndrome	1

Health effects experienced- ----------

B3. Health problems, 20 most cited symptoms reported:
250 respondents

	Responses
Chronic fatigue	174
Concentration problems	170
Hearing problems	168
Face and skin problems	166
Insomnia	158
Eye problems	158
Numb feeling in head	123

Skin problems	123
Headache	120
Pressure in head	115
Dizziness	107
Nose problems	105
Memory problems	100
Being irritated	96
Dry skin	91
Restlessness, hyperactivity	80
Blocked nose	72
Itching hair	63
Agitation	59
Vital fatigue	58
'Tight band around head'	58
Spasms	57
Nervousness	50
Eczema	44
Heart rhythm problems	42
Spastic intestine	41
Restless legs	39
Itching leg	32
Aggression	30
Change in blood pressure	25
RSI	17
Epilepsy	12
'Brainwave'	9

B4. Organ-oriented health problems

Head

246 respondents

	Responses
Numb feeling in head	123
Headache and migraine	120
Pressure insight head	115
Tight band around head	58
Sensation of flu or cold	30

Face and facial skin

166 respondents

	Responses
Dry skin	71
Hair irritation/itching	63
Reddish facial skin	47
Warm facial skin	47
Feeling of needle punctures	32
Facial discoloration	29
Swollen skin	29
Hurting eyebrows	27
Pimples	19

Skin
123 respondents

	Responses
General itching	49
Eczema	44
Subcutaneous itching	29
Inflammations	26
Pimples	22
Reddening of the skin	20
Psoriasis	16
Mould infections	14
Urticaria	6

Ears
168 respondents

	Responses
Buzzing ears	96
Hissing sounds	80
Loss of hearing	63
Strong low frequency sounds	55
Ear aches	38
Sound of bells clanging	28

Eyes
158 respondents

	Responses
Eye irritation	106
Bad focus	104

Nose
105 respondents

	Responses
Blocking nose	72
Running nose	49

Status of EHS- ----------

B5. Is EHS the cause of your health problems or is it a side-effect of other environmental illnesses?
96 respondents

	Percentages
EHS is the cause	84%
EHS is the consequence of earlier diseases	12%
Don’t know	0%

B6. Do your health problems disappear in an electrically clean environment?
128 respondents

	Percentages
Yes, the complaints disappear	77%
Don't know	18%
No, they don't disappear	5%

Other environmental hypersensitivities- ----------

B7. Are you allergic or intolerant for one of the next specific substances, treatments or environmental factors?
169 respondents

	Responses
Nutrient	92
Loud noise	72
Smells	59
Medication	50
Pollen	48
Dust mite	42
Sunlight	41
Light	39
Sodium glutamate (MSG)	38
Antibiotics	38
Fine dust particles, smaller than 10 µm	36
Preservatives	26
Narcotics	23
Smell of printing ink	21
Histamine	21
Pesticides	20
Stings of honeybees or wasps	18

B8. Various complaints
In personal contacts apart from this questionnaire, people reported the following problems: sudden colds, continuous sneezing, dry eyes feeling like sandpaper, taste of smells, cramps or pain in jaws and teeth, rough turning of neck vertebrae, and other less common complaints.

Current health status----------

B9. Are you an emotional person?
191 respondents

	Percentages
I find myself rather emotional	63%
I find myself moderately emotional	28%
I find myself not emotional	9%

B10. How is your health now?
180 respondents

	Percentages
I feel fine	24%
I feel moderately healthy	45%

My health is bad	31%

B11. Do you ever use tranquilizers?
138 respondents

	Percentages
Yes, regularly	20%
Now and then	25%
Never	57%

C. Causes of EHS, risk factors – Physical factors

***Inside EMF sources*----------**

C1. Disturbing appliances and installations at home. Which of the next items do you use?
250 respondents

	Responses
Television, radio, video, DVD player, audio	137
Personal computer with peripheral	100
Fluorescent lights	81
Halogen illumination with transformer	80
Energy saving lamps	78
Dect telephone	71
Using a cell phone inside	64
Electric alarm clock near be	62
Using a cell phone outside	60
Audio apparatus	49
Programmable central heating thermostat	47
Central heating stove	45
Light intensity dimmer	45
ADSL modem	44
Wireless	44
Permanent wall-mounted ventilator	39
WiFi	37
LCD	36
Telephone answering recorder	29
Burglar alarm	23
Electric blanket	22
Roof ventilator	20
Electric adjustable bed	17
Video games: Nintendo, Play station, etc	15
Water	11
Induction heater	10
Electric floor heating sys	8
Digital intercom inst. with video display	5
Electric toy train on D	4
Digital electricity m	4

C2. Which appliances are bothering you most?

189 respondents

	Responses
Dect telephone	76
Television, personal computer	53
Buzzing sounds (of the neighbors)	31
Low frequency noises of neighbors	31
WIFI installations	21
Other electric installations	19

C3. Addendum

Apart from this questionnaire, we maintained contact with individuals who reported that they were disturbed very rapidly by one or more of the following apparatuses: magnetic brakes of coaches going downhill, machinery in fitness centers driven by –or retarded by electric power, battery chargers, electric razors, electric traction of wheelchairs, power tools, detection gates in airports and shops, electronic dog watch, check out counters in shops, high frequency plastic sealing apparatus, digital photo camera's, all types of LCD screens in cars and navigational systems, data transmission lines in offices, electric connections between GSM base station antenna and the power supply of these masts, handsets for mobile communication, digital heat sensors for monitoring radiator temperatures, motor cars with hybrid motors (combination of electric and combustion motors), electric fences and microwave oven.

Outside EMF sources ----------

C4. Installations within critical distance from the house (risk factors)

165 respondents

	Responses
GSM base station (less than 400m)	69
Electricity power cable in the street (less than 10m)	25
High-voltage transformer unit (less than 20m)	25
UMTS transmitter (less than 200m)	23
Street car tracks (less than 200m)	22
Electrified railroad (less than 500m)	17
Tetra base station (less than 1000m)	13
Amateur radio transmitter (less than 100m	10
Electric fences (less than 100m)	7
High tension power cables (less than 100m)	7
Underground metro (less than 100m)	2

D. Medical assistance sought

Regular medicine----------

D1. Which regular medical and paramedical help have you sought?

196 respondents

	Responses
Family doctor	192
Neurologist	60
Acupuncturist	59

Allergy specialist	56
Institutional doctor	47
Physiotherapist	38
Psychologist	35
Psychiatrist	21
Medical inspector	17
Rheumatologist	5

Apart from this questionnaire, personal contacts with electro sensitive people indicated that the following specialists have been consulted as well: general physician, jaw surgeon, throat – nose – ear specialist, revalidation physician.

N.B. None of the doctors visited understood the real condition of the EHS patient. A psychiatric consultation was sometimes suggested. None of the EHS sufferers received any advice that helped them understand or combat their EMF hazards.

Alternative practitioners ----------

D2. Which alternative therapist or treatment have you sought?
151 respondents

	Responses
Homeopath	63
Electro-Acupuncturist	45
Bio resonance therapist	41
Naturopathic practitioner	34
Orthomolecular practitioner	30
Home sanitizer	21
Dowsing rod	19
Reiki therapist	17
Osteopath	15
Lechner antenne practitioner	12
Paranormal therapist	12
Kinesiologist	11
Haptonomist	11
Healer	9
Bio tensor therapist	2

D3. Alternative practitioners and home sanitation?

Apart from this list, a broad variety of therapists have been consulted that were said to have the gift of localization and neutralization of (undefined) fields in home or environment, protection of the body, or treatment of the body with diverse forms of electrotherapy or other therapies.
As the rationale of these therapies has not been documented by these practitioners, no attempt has been made to analyze the functionality of these therapies.
All together, 142 persons (approx. 56.8%) have indicated to have contacted one or more of these alternative therapists and they made their choice out of over 70 different therapies.

D4. What was the result of the alternative therapies?
91 respondents

	Percentages
Result was good	14%
Result was doubtful	30%
There was no result or negative result	56%

E. Heredity of EHS

E1. Are you recognizing signs of electrical hypersensitivity with your family members? Yes, the following members appeared EHS to me:
54 respondents

	Responses
Son, daughter	27
Brother, sister	21
Father, mother	20
Nephew, niece	2
Uncle, aunt	1

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