newsletter

Electrosensitivity

People who respond hypersensitively to electromagnetic fields (EMF) experience a variety of - sometimes severe - discomforts. However, the actual connection - if any - between the cause (EMF) and these effects remains a subject of controversial debate.

Introduction

"Electrosensitivity", also known as "electrical hypersensitivity", is a phenomenon whereby people experience subjective health impairments as soon as they come close to sources of electromagnetic fields. The debate is currently focused on the possible adverse effects on health, particularly in connection with mobile phones.

Biological effects of electrical and magnetic fields

Electrical fields do not penetrate deep into the human body, so their effects are mainly superficial. Besides, as they can be quite effectively shielded from the outside, the electrical field strengths of electrical devices are relatively weak. This is not true of magnetic fields, however. These are generated by the flow of electric current. The force field that builds up around a current-carrying conductor increases in line with the strength of the current. Magnetic fields can pass through walls, metals and the human body, and are difficult to shield. Alternating magnetic fields can cause eddy currents in the body which, above certain thresholds, can stimulate nerves and muscle cells.
Literature: "EMF – A phantom risk", Swiss Re 1996; apropos - Electrosmog, AssTech 1993.

Limits

Statutory or recommended limits have been established to protect the public against the effects of EMF. These limits are defined on the basis of the body current densities occurring in nature and on life-long exposure. However, national and international limits, standards and recommendations differ widely. Apart from the well-documented effects of acute exposure, biological responses are thought to be triggered even at field strengths beneath the allowable limits.

Electro-sensitivity

The first technically generated ("man-made") electromagnetic fields appeared around 100 years ago, and for the past 50 years they have been permeating the natural environment. However, the human organism does not have any sensory organs to detect electromagnetic fields and radiation and to warn about possible harmful effects. About 70% of the German populace suffers from occasional or chronic complaints such as headache, lack of sleep, inability to concentrate, or lack of drive, which may be due to any of a number of causes. Some 1-2 % of the population are of the opinion that their complaints are caused by electro-magnetic fields emanating from devices and equipment in their vicinity. These people refer to themselves as "electrosensitive". They claim that they can directly feel the effects of electromagnetic fields, eg from mobile phones, on their organisms. Electrosensitive people experience a wide range of subjective and sometimes very disturbing discomforts such as nervousness, depressed

moods, mental instability, chronic fatigue syndrome, hearing radio waves (without having a radio on), inability to concentrate, psychosomatic disorders, bed-wetting and irregular heartbeat. The intensity of these phenomena changes constantly, depending on the strength of the electromagnetic fields surrounding these persons.
The literature distinguishes three categories of electrosensitive persons. The criteria are conscious perception, their personal attitude to electromagnetic fields and the symptoms experienced. People in Category 1 experience slight prickling and hair vibration even at field strengths just below the limits. These sensations are objectively comprehensible and amenable to explanation. Category 2 EHS sufferers attribute sleeping disorders and even psychosomatic illnesses to electromagnetic fields (self-diagnosis), although there is no recognisable correlation between field strength and symptoms. Category 3 sufferers are simply convinced that electromagnetic fields are responsible for their various health impairments. Up to now, it is impossible to say which of these three viewpoints comes closest to reflecting actual reality, as such studies that have been performed to date have failed to come to any clean-cut and generally accepted conclusions. This is all the more surprising, in that quite a lot of research is being conducted in this field, due to the high public interest.

Assessments by the German SSC and the ICNIRP

In 2001, the German radiological safety commission SSC reviewed the state of the art concerning the health effects of mobile phone technology. In the commission's opinion, there is currently no proof of mobile telephony posing any real danger. The SSC also reviewed the need for stricter precautionary measures, but came to the conclusion that, to the best of current knowledge, the limits already in place afford adequate protection. However, scientific pointers to possible health risks should continue to be followed up.
An audit of the pertinent scientific literature conducted by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) in 2002 with a view to identifying any health hazards due to the use of mobile phone equipment and operation of the associated base stations arrived at the following findings:

- The results of published epidemiological studies do not form a basis for health hazard assessments due to radio-frequency fields, neither can they be used for setting quantitative restrictions on human exposure. They do not provide a basis for hazard assessments in relation to the use of hand-held radiotelephones and base transmitters.
- There is no substantive evidence that adverse health effects can occur in people exposed to levels at or below the recommended limits.
- The localised specific absorption rates (SAR) in the head associated with the use of hand-held radiotelephones must be assessed for each frequency and configuration used.

Hazards and drawbacks

Acute health hazards to users of radiotelephones and mobiles can be practically ruled out at present, provided that the applicable limits are complied with. Nevertheless, it is important to point out some indirect hazards and drawbacks associated with possible electromagnetic interference with electrical and electronic medical equipment and aids. This may involve, for instance, interference with the proper functioning of sensitive diagnostic or therapeutic equipment, eg in hospitals and doctors' surgeries; mobile phones interfering with heart pacemakers, insulin pumps, nerve stimulators or other electrically controlled

implants, and nuisance caused to hearing-aid wearers due to externally induced humming noises. There is no doubt that electromagnetic waves have biological effects. The dispute is about whether those effects are detrimental to health. The definition of statutory limits is governed by the precautionary principle. It is estimated that about 2% of the European population is potentially sensitive to electromagnetic radiation (this would affect about 9 million people in the EU).

Relevance for underwriters

Although there is no scientific proof of a health risk, neither for mobile-phone users nor for people living in the vicinity of transmitter stations, electrosensitivity is an issue that has to be taken seriously. It is a fact that there are people who plausibly describe symptoms in connection with electromagnetic exposure and that these symptoms can be reproduced in laboratory experiments. These symptoms are not severe enough to constitute a concrete health risk, but they can be a serious impediment in everyday life.
In the light of the situation outlined, it is advisable to take all reasonable precautions with respect to sources of electromagnetic radiation. This applies both in the working environment and also in the private sphere (eg avoid building houses beneath high-voltage transmission lines, insulate underground cables).
If a causal relationship between EMF and harm to health were ever to be scientifically proven, the consequences for product liability, especially in radio-frequency technologies, would be immeasurable. Insurers could be faced with series and/or accumulation claims of unprecedented and incalculable magnitude. For that reason, EMF is counted among the emerging or "phantom" risks, and a number of exclusions have already been in use in the market for some time.
In the context of liability cover, the following sectors of industry have a particularly high EMF exposure: telecommunications companies, especially operators of mobile telephone systems; manufacturers of mobile phones and related equipment; manufacturers of electrical and electronic devices and equipment; power supply utilities (generation and distribution of electric power); and operators of public transportation systems.
Literature: "Emerging Risks, A challenge for the liability underwriter", Swiss Re 2003.

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