



**Editorial**

**Electromagnetic fields in homes**

We humans have no sensory organ by which we can feel or sense electromagnetic fields (EMF); in this aspect we differ from some other species, e.g. from migratory birds. As obscure, unknown, not well defined risks and threats are liable to produce angst, some people fear negative effects on well-being and health, even within their own protecting domestic walls. Extremely low frequency fields (ELF) (50 Hz) and high frequencies (HF) (in the kHz – MHz – range) are those to be discussed when domestic settings are considered.

EMF exist wherever electricity is generated and transmitted, through power lines, cables, or wirelessly. Electricity being an integral part of modern lifestyle, we are exposed to it constantly and ubiquitously. The existence of electric cables and the use of electrical appliances is one important source of domestic EMF. Also, high voltage power lines give reason for discussion. At any time and place we are surrounded by high frequency EMF, providing e.g. television and radio programs. The installation of widespread wireless telecommunication services (mobile phones and their base stations, DECT phones, WLANs) have been in the focus of many discussions during the last two decades.

There exist no known mechanisms by which EMF (below certain well-established thresholds for field strengths) should be pathogenic (carcinogenic, mutagenic, tumour-promoting) or should influence behaviour or well-being. Many studies done in vitro and in animals are performed under conditions which differ largely from those under which humans are exposed in their daily lifes. Intensities of experimental fields are often magnitudes of order higher than those

**Table of Contents**

**Editorial**

Electromagnetic fields in homes ..... 1

**Electromagnetic fields - Information and health risk perception**

EMF-Portal - Comprehensive information about research on electromagnetic fields 2

Health risk perception of electromagnetic fields ..... 8

**Publications and Resources** ..... 9

**Literature** ..... 10

**Events Announcement** ..... 21

**Message Board** ..... 22

**Message Board** ..... 19

occurring in our environment, and the duration of exposure must be considered. As also species differences are to be taken into account, many published results must be interpreted cautiously. Overall, investigations in animals or on in vitro cell cultures that try to establish whether EMF can induce cancer or are tumor-promoting, have yielded no or no consistent effects. Much of the information on possible health effects comes from epidemiological studies. Results are mostly inconsistent, often contradictory, and adverse health effects – if there are any – would be so small as to be detectable only with difficulty, even in large epidemiological studies. According to each one’s personal bias and to scientific or ideological backgrounds, either results of studies that demonstrate some effect are stressed and are brought forward, or those that show the absence of correlation.

Electrosensibility (ability to feel EMF of low intensity) and electrosensitivity (becoming ill due to EMF) are self reported phenomena. Those who suffer from their postulated

electrosensitivity are reporting sleep disturbances, headaches, vertigo, cardiac dysrhythmias, depression and a number of further complaints. So far, there has been no proof or demonstration that EMF with the intensities encountered in our daily life are the reason for such disturbances of health and well-being. National and international agencies, as WHO, SCENHIR, and most scientists are convinced that electrosensitivity and –sensitivity do not exist. In contrast, people who believe that their health is impaired by EMF estimate that 10% of the population may be electrosensitive.

People that want to be – somewhat irrationally – on the very safe side can install in their homes appliances that turn off all voltage whenever it is not needed and thus reduce the electric fields in homes. There is no practicable means to totally avoid ELF magnetic fields from cables used to provide electricity in household appliances when these devices are in use. One can keep, if possible, as much distance as feasible to the electric household appliances. Neither, the magnetic field emitted by high-voltage power lines can be shielded, be they overhead or underground.

HF fields (radio and mobile phone frequencies) are quite effectively absorbed by concrete and steel. Further shielding using metalized wallpapers and/or curtains is of questionable benefit and may produce other environmental problems. DECT telephones with ECO mode might be preferred to conventional DECT phones. WLANs can be switched off when not in function, and one may use mobile phones as briefly and rarely as possible.

Electromagnetic fields become markedly weaker with increasing distance from the source. This fact is also of importance when the impact of high voltage power lines is discussed. At very close distance (below 200 m), domestic magnetic fields with intensities of approximately 0.4  $\mu\text{T}$  are sometimes encountered, and in larger epidemiologic studies such fields have been associated with childhood leukemia. This has not been found, however, at larger distances. These observations have resulted in the classification of low frequency low intensity magnetic fields as “possibly carcinogenic” (group 2B) by the International Agency for Research on Cancer (IARC). Recently, the IARC has also classified HF-generated EMF as group 2B, i.e. as possibly carcinogenic, a decision not uniformly accepted in the scientific community.

It might be wise to keep in mind that, if EMF really should be carcinogenic or tumor promoting, any such effects must be very small; in many investigations they cannot be demonstrated, or in others only marginally and inconsistently. There are certainly more important environmental factors that really threaten or damage health and well-being and should be worth our attention.

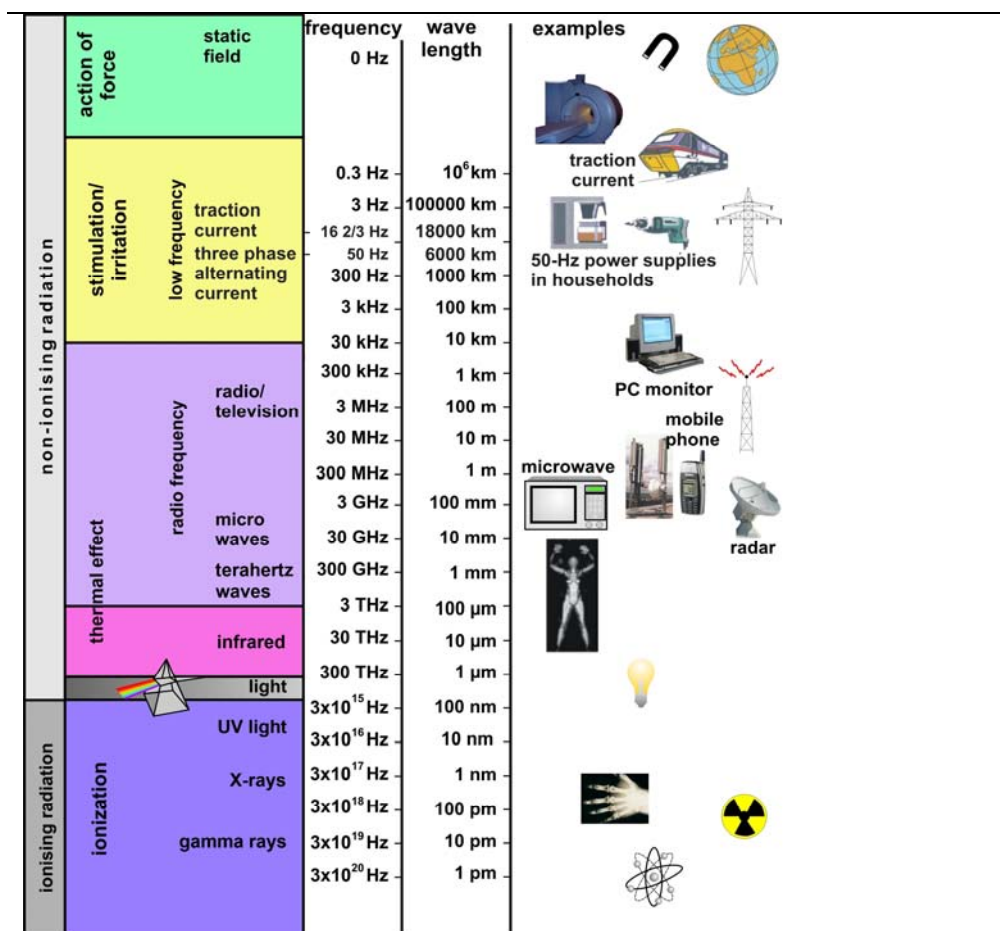
*Professor Dr. med. Karl Ernst v. Mühlendahl,  
environmental medicine, pediatrician,  
Kinderumwelt gGmbH der Deutschen  
Akademie für Kinder- und Jugendmedizin e. V.,  
Osnabrück.  
Email: [info@uminfo.de](mailto:info@uminfo.de)*

---

## **EMF-Portal - Comprehensive information about research on electromagnetic fields**

*Dr. Frank Gollnick, Dagmar Dechent, Dr. Sarah Driessen, Tanja Emonds, David Gräfrath, Anne-Kathrin Petri, Prof. Dr. Thomas Kraus, femu – Research Center for Bioelectromagnetic Interaction, Institute of Occupational Medicine, Uniklinik RWTH Aachen University, Aachen, Germany.  
[gollnick@femu.rwth-aachen.de](mailto:gollnick@femu.rwth-aachen.de)*

The Research Center for Bioelectromagnetic Interaction (*femu*) as part of the Institute of Occupational Medicine in Aachen, Germany, is the University Hospital's department which conducts interdisciplinary research on biological and medical effects of electric, magnetic, and electromagnetic fields (EMF). In the electromagnetic spectrum, these fields belong to the range of non-ionizing radiation (Figure 1).



**Figure 1: Electromagnetic spectrum**

Electric, magnetic, and electromagnetic fields arise as a result of natural processes such as lightning, radiation from the sun, thunderclouds, and the earth's magnetic field, or they are artificially created in association with technical processes or devices. The electromagnetic fields are classified according to their frequency, for example, radio frequency (RF) EMF (emitted e.g. from mobile phones or microwave ovens), and low frequency (e.g. extremely low frequency magnetic fields, ELF-EMF, emitted from power lines or electrical household devices). With an interdisciplinary approach, *femu* covers scientific information on non-ionizing radiation in its open-access internet information platform "EMF-Portal" as well as active research in clinical provocation studies on electromagnetic interference with cardiac implants as pacemakers or defibrillators.

### EMF-Portal

The EMF-Portal ([www.emf-portal.org](http://www.emf-portal.org)) is the most comprehensive scientific literature database on biological and health-related effects of non-ionizing electromagnetic radiation (frequency range 0-300 GHz) with unrestricted access (Figure 2). It has been run and administered at *femu* since 2005. In this English/German internet information system, scientific publications are collected, categorized according to the EMF-emitting source (devices or other technical set-ups) and investigated endpoint, and summarized in a way that makes the scientific content easily comprehensible for users. As of October 2013, the database included a total of more than 18,400 scientific paper entries and other relevant publications (e.g. laws, recommendations, and guidelines) that can be searched by elaborate routines. The user can get additional information via the extensive directly text-linked glossary (2,900 entries), graphical and tabular overviews of certain research topics, and a database of electromagnetic field emitting sources. Many open-access journal articles are directly linked. The web portal addresses equally scientists, politicians, physicians, lawyers, journalists, and the interested public.

**Figure 2: EMF-Portal homepage**

The WHO references the EMF-Portal on their website under the topic “Electromagnetic fields (EMF)”<sup>1</sup>. On request, *femu* provides tailored packages or lists of EMF literature serving specific needs of working groups and committees, as e.g. done for the below mentioned Monograph Vol. 102 Meeting at the International Agency for Research on Cancer (IARC) in 2011, published 2013<sup>2</sup>.

### Overview of mobile phone related research

Out of 18,400 publications in the database, 6,194 are attributable to the radio frequency range (> 10 MHz), and further 1,470 publications can be attributed to radio frequency as well as to the low-frequency range. In the range of radio frequency EMF, research on possible health effects of mobile communication technologies (e.g. mobile phones) has raised much attention in the world over the last two decades. On this subject, 782 experimental studies and 179 epidemiological studies are included in the EMF-Portal database (as of October 2013). Both of these study types are fully extracted into comprehensive summaries in the EMF-Portal. Interactive pie charts in the website area “Graphical Overviews” lead to different subject areas, e.g. comprehensive overviews of all mobile phone related experimental or epidemiological studies. From here the user can explore the categorized data content on themes such as “brain cancer”, “health”, or “cell functions”. Further categorized topics lead to a list of studies on a certain topic (e.g. “hypersensitivity”), a table with further details, and to background information about this topic, e.g. “Terminology”, “Evaluation of existing studies”, or “Evaluation by national and international organizations”(Figure 3). All data is always automatically generated in real time from the current content of the database in order to provide the complete and most current list of available information on a certain investigated endpoint. From the list and from the table, the user can further proceed to the summarized details of each displayed publication by one click. All this information enables non-expert users to find an easy introduction to the subject.

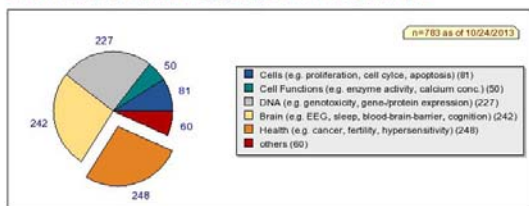
<sup>1</sup> <http://www.who.int/peh-emf/research/database/en/index1.html>

<sup>2</sup> <http://monographs.iarc.fr/ENG/Monographs/vol102/index.php>

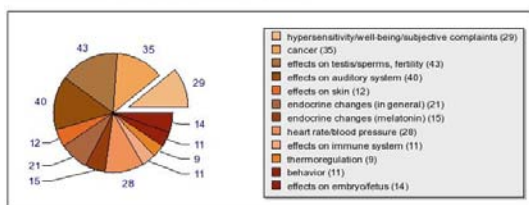


**Mobile-phone related experimental studies of the broader category 'medical/biological'**

View articles of one endpoint (aim of the study) by clicking on its associated segment or caption.



**Health and mobile phone exposure**



**Hypersensitivity/well-being/subjective complaints**

Studies	Background information
list	<ol style="list-style-type: none"> <li>1. Terminology</li> <li>2. Symptoms</li> <li>3. Historical background</li> <li>4. Prevalence and individual vulnerability</li> <li>5. Excursion: Effects of electromagnetic fields</li> <li>6. Possible mechanisms of action</li> <li>7. Status in the health care sector</li> <li>8. Problems of experimental research studies</li> <li>9. Evaluation of existing studies</li> <li>10. Electrosensitivity and mobile phones - Evaluation by national and international organizations</li> </ol>

**Table of Articles**

Click on the headline of a column to sort the specific parameter in chronologic or alphabetical order. Click on a particular author to view the full summary.

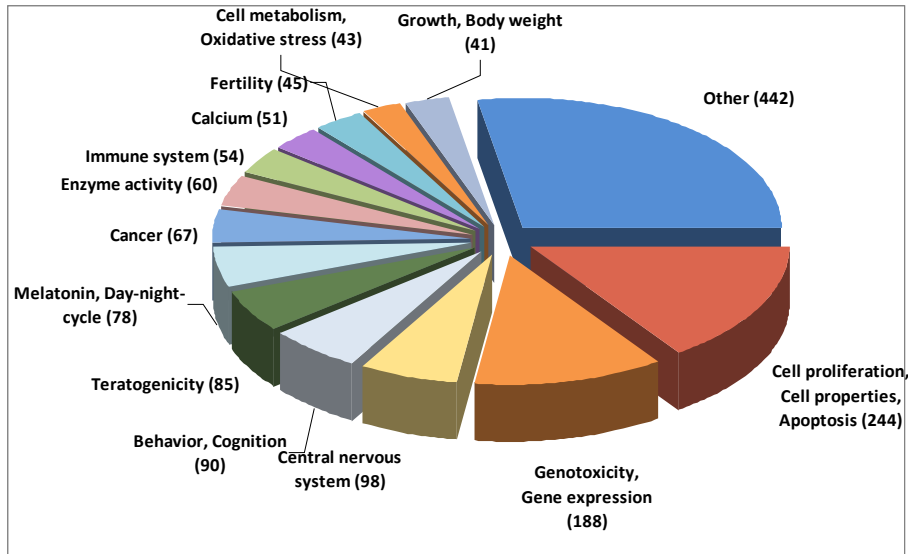
Authors	Year	Exposed System	Endpoints	Frequency Range	SAR	Exposure Duration	Parameter
Augner C et al.	2012	human	subjective symptoms (headache, nausea, fatigue, dizziness, skin irritation), physiological measures (heart rate, heart rate variability, blood pressure)	835 MHz - 1.8 GHz	not specified	5-180 min	mobile communication system mobile phone, analog mobile phone, GSM, NMT
Nieto-Hernandez R et al.	2011	human	mood and symptoms	365.25 MHz	0.3 W/kg - 1.3 W/kg	continuous for 50 min	mobile communication system TETRA/TETRA-POL, radio frequency field CW (continuous wave), PW (pulsed wave)
Wallace D et al.	2010	human	electrosensitivity (well-being and different physiological responses)	420 MHz	0.000271 W/kg	continuous for 15 min for the open provocation test, 2 times 5 min for the double blind test	mobile communication system TETRA/TETRA-POL, TDMA, radio frequency field
Kaul G	2009	human	field perception	50 Hz - 915.2 MHz	0.00075 W/kg	3 times 10 min	mobile communication system digital mobile phone, GSM, magnetic field, 50/60 Hz (A/C)
Nam KC et al.	2009	human	pulse rate, heart rate variability, heart rate, respiratory rate, subjective symptoms, perception of radiofrequency exposure	624.64 MHz - 948.37 MHz	1.22 W/kg	continuous for 30 min	mobile communication system digital mobile phone, CDMA
Ertli S et al.	2009	human	cognitive functioning: short-term memory, attention and perceptual motor speed, working memory, blood volume pulse, heart rate, skin conductance	900 MHz - 2.02 GHz	not specified	continuous for 50 min	mobile communication system cell phone base station, GSM, UMTS
Dahmen H et al.	2009	human	blood parameters	not specified	not specified	not specified	mobile phone, cell phone base station, W-LAN/WiFi, wireless transmitter (RF)

**Figure 3: Interactive graphical overviews and table on mobile-phone related experimental studies, regarding as an example the theme “health” and the topic “hypersensitivity”.**

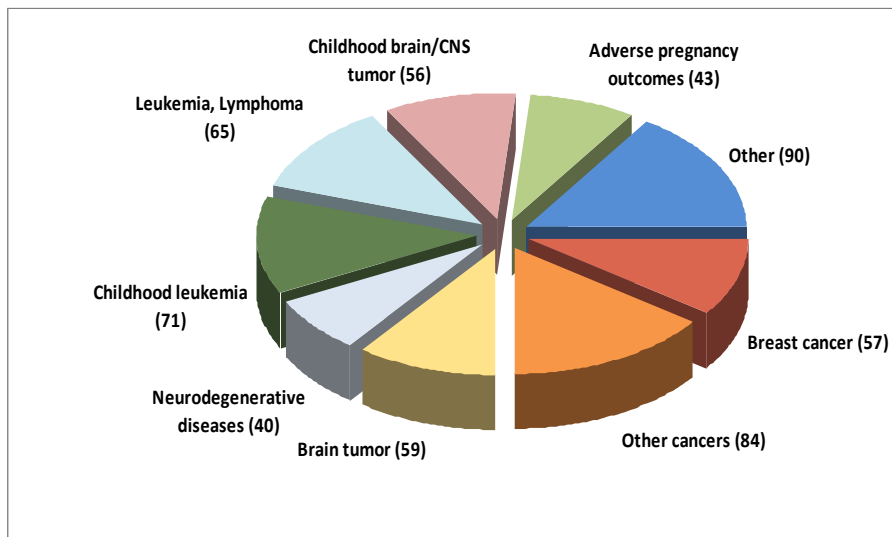
**Extremely low frequency (50/60 Hz) related research**

In the range of extremely low frequency EMF (ELF-EMF), research on possible effects of 50/60 Hz magnetic and electric fields from power lines, machines, household devices, and inhouse wiring raises currently much interest in Germany. Regarding this research area, about 1,590 experimental studies and about 400 epidemiological studies have been published so far.

An initial exploration of 50/60 Hz publications revealed that the main focus of experimental studies is on *in vitro* studies dealing with cell proliferation, apoptosis (programmed cell death), cell properties, genotoxicity, and gene expression (Figure 4a). Effects on the central nervous system and behaviour or cognition have also been frequently investigated. In epidemiological studies, childhood leukemia is the most investigated endpoint, followed by leukemia/lymphoma in adults, brain tumors, breast cancer, and brain or central nervous system tumors in children (Figure 4b).



**Figure 4a:** Overview of experimental studies in the 50/60 Hz frequency range



**Figure 4b:** Overview of epidemiological studies in the 50/60 Hz frequency range.

A detailed analysis of the whole database of 50/60 Hz studies is currently ongoing as part of a project funded by the German Federal Office for Radiation Protection (BfS). The aims are to provide a comprehensive overview of the general public exposure to extremely low-frequency fields based on reliable scientific data and to clearly present the whole range of scientific literature on possible environmental or health effects of 50/60 Hz fields. The results will be shown as interactive graphical overviews, as described above for mobile phone and children related studies. It shall meet the information demands of citizens about possible health effects of EMF and shall also support national and international expert commissions in their efforts to assess possible threats based on the latest scientific knowledge, enabling the recommendation of adequate safety limits. The project will continue until mid-2015. First results are expected to be published mid-2014 on the websites of the EMF-Portal. Until then, users can find these studies easily by using the search routine of the EMF-Portal. The search can be narrowed according to author(s), year of publication, keywords, and furthermore according to the frequency range (e.g. 50/60 Hz power frequency) and single research topics.

### Classification of static, extremely low-, and radio frequency EMF by the IARC

A prominent example of careful evaluation of the literature by expert groups and thus thorough assessments of the current scientific evidence is the Monograph Programme of WHO's International Agency for Research on Cancer (IARC). In this programme, IARC performs and publishes a series of extensive scientific expert reviews that identify environmental risk factors for cancer. To this day, the IARC Monographs have reviewed more than 900 agents and have identified more than 400 known, probable and possible carcinogens.<sup>3</sup> Static, extremely low-frequency electric and magnetic fields, and radio frequency EMF have been reviewed in 2002 (Volume 80) and 2013 (Volume 102), respectively<sup>4</sup>. Radio frequency EMF (RF-EMF) were classified by the IARC working group as "possibly carcinogenic to humans", based on limited evidence in humans and in experimental animals for the carcinogenicity of radiofrequency radiation (IARC 2013)<sup>5</sup>. Epidemiological studies that focused on mobile phone use and the risk for brain tumors were most relevant for this classification. Although these studies "are susceptible to bias – due to recall error and selection for participation – the Working Group concluded that the findings could not be dismissed as reflecting bias alone, and that a causal interpretation between mobile phone RF-EMF exposure and glioma is possible" (Baan 2011). A similar conclusion was drawn for acoustic neuroma, although the case numbers were substantially smaller than for glioma. For other tumor types and for the possible association between environmental exposure to RF-EMF and cancer, the working group found the results were inconsistent, or the available evidence was insufficient for any conclusion (Baan 2011).

Extremely low-frequency (ELF) *magnetic* fields were also classified as "possibly carcinogenic to humans" (IARC 2002)<sup>6</sup>. In this context, a possible association between ELF magnetic fields and the occurrence of *childhood leukemia* was (and still is) a crucial element of evidence. Results of a number of epidemiological studies indicated a raised risk of leukemia in children if they were chronically exposed at home to 50/60 Hz magnetic flux densities above 0.3-0.4 Microtesla ( $\mu\text{T}$ ). In adults, and in general for ELF *electric* fields, there is no such association. Also, there is no consistent evidence of increased childhood *brain tumor risk* associated with ELF magnetic field exposure (Kheifets 2010). However, the validity of epidemiological studies is often limited by methodological problems, such as selection bias (i.e., a systematic error by different participation behaviour of case and control groups). Furthermore, a plausible underlying mechanism of interaction between weak magnetic fields and the processes or structures in cells relevant for the development of leukemia has not been found so far. In 2007, a WHO task group updated the IARC review from 2002 and another related review by the International Commission on Non-Ionizing Radiation Protection (ICNIRP 2003). The former conclusions were confirmed (WHO 2007): "The Task Group concluded that additional studies since then do not alter the status of this classification. Thus, if there were any effects from exposures to these low-level fields, it would have to be through a biological mechanism that is as yet unknown. Additionally, animal studies have been largely negative. Thus, on balance, the evidence related to childhood leukaemia is not strong enough to be considered causal."<sup>7</sup>

Static electric and magnetic fields and extremely low-frequency electric fields were evaluated by the IARC working group in 2002 as "not classifiable as to their carcinogenicity to humans" (Group 3).

International research is currently focusing on possible interaction mechanisms between exposure to ELF magnetic fields and the development of leukemia by applying new experimental methods and computer simulations (ARIMMORA, a collaborative project funded by the European Commission within the 7th Framework Program)<sup>8</sup>. Another current research focus is the investigation of possible effects of ELF electric and magnetic fields on the development of neurodegenerative diseases, as Alzheimer's disease or amyotrophic lateral sclerosis (ALS).

<sup>3</sup> <http://monographs.iarc.fr/>

<sup>4</sup> <http://monographs.iarc.fr/ENG/Monographs/PDFs/index.php>

<sup>5</sup> <http://monographs.iarc.fr/ENG/Monographs/vol102/index.php>

<sup>6</sup> <http://monographs.iarc.fr/ENG/Monographs/vol80/index.php>

<sup>7</sup> <http://www.who.int/peh-emf/publications/facts/fs322/en/index.html>

<sup>8</sup> <http://arimmora-fp7.eu/>

## References

- Baan R. et al. (2011) Carcinogenicity of radiofrequency electromagnetic fields. *The Lancet Oncology* 12(7), 624 – 626.
- IARC (2002) International Agency for Research on Cancer. Working Group on the Evaluation of Carcinogenic Risks to Humans. Non-ionizing radiation, Part 1: Static and extremely low-frequency (ELF) electric and magnetic fields. Lyon, IARC, 2002 (Monographs on the Evaluation of Carcinogenic Risks to Humans, 80).
- IARC (2013) International Agency for Research on Cancer. Working Group on the Evaluation of Carcinogenic Risks to Humans. Non-ionizing radiation, Part 2: Radiofrequency Electromagnetic Fields. Lyon, IARC, 2013 (Monographs on the Evaluation of Carcinogenic Risks to Humans, 102).
- ICNIRP (2003) International Commission on Non-Ionizing Radiation Protection. Exposure to static and low frequency electromagnetic fields, biological effects and health consequences (0-100 kHz). Bernhardt JH et al., eds. Oberschleissheim, International Commission on Non-ionizing Radiation Protection (ICNIRP 13/2003).
- Kheifets L. et al. (2010) A pooled analysis of extremely low-frequency magnetic fields and childhood brain tumors. *Am. J. Epidemiol.* 172(7):752-761.
- WHO (2007) World Health Organization. Extremely low frequency fields. *Environmental Health Criteria*, Vol. 238. Geneva.

---

## Health risk perception of electromagnetic fields

Dr. Stefanie Kolb & Prof. Dr. Caroline Herr  
Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit, München, Germany  
[stefanie.kolb@lgl.bayern.de](mailto:stefanie.kolb@lgl.bayern.de); [caroline.herr@lgl.bayern.de](mailto:caroline.herr@lgl.bayern.de)

Nowadays, wireless communication services (high frequency fields, e.g. mobile phones and base stations) as well as all forms of electricity (low frequency fields, e.g. power lines and electrical devices) are frequently discussed topics in context of health risk perception of electromagnetic fields (EMF).

High frequency fields have become more relevant due to the increase of the mobile communication network since the end of the last and the beginning of this century. Especially base stations and their locations have been subject of media publications and public meetings. Still there is a great gap between meanwhile enormous scientific knowledge and the risk perception in the population.

So far, numerous studies regarding risk perception were carried out, taking not only biological but also sociological and psychological aspects into account. Furthermore, this topic became a focus of interest in the German Mobile Telecommunication Research Programme. In the years 2003 to 2006 as well as in 2009 the infas – Institute for Applied Social Sciences – conducted numerous telephone interviews on behalf of the Federal Office for Radiation Protection (BfS) to assess the public's opinion concerning possible risks of EMF. Due to their results the use of mobile phones is still increasing. Reasons for not using this technology were e.g. lack of need (52 % of the non-users) and in a small fraction health problems (3 % of the non-users). Furthermore approximately 31 percent of the population is concerned about the potential health effects EMF and 11 percent feel impaired due to the exposure to EMF. In this latter group headache with 18 percent and sleeping problems with 12 percent are most common, and interestingly more than 50 percent cannot specify a disorder caused by EMF. The group of the concerned population was particularly in fear of getting cancer and headache. However, in comparison to other factors like consumption of meat of unknown origin, genetically modified food, air pollution, side-effects of medication, UV-radiation, heavy cigarette smoking and immoderate consumption of alcohol, EMF is rated as a minor potential health risk. Nevertheless the population's interest in EMF seems to be increasing during the last years, 33 percent of the respondents ask for further information about this topic.



In the context of low frequency fields particularly power lines are subject of discussion. Previous studies showed that the distance of the home to a power line may be relevant for risk perception. The smaller the distance between home and power lines is, the more people are concerned and impaired, especially if the power line is in their visibility range. Furthermore an increase in the subjective impairment is associated with rising information demands as well as the desire to communicate with others about health concerns. Generally, besides personal factors like age, sex and education, the subjective perception of the exposition (in terms of individual manageability, benefit) is very important in the risk perception of EMF.

In summary, risk perception concerning EMF has been intensively looked into by scientific studies and influencing factors are known quite well. Further risk communication has to take this knowledge into account. Besides scientific aspects also technical and physical aspects of EMF should be communicated due to the fact that the knowledge of these aspects is limited in the population so far.

### **Literature**

*Elektromagnetische Felder – Risikowahrnehmung in der Öffentlichkeit. Christiane Pözl-Viol, Bundesamt für Strahlenschutz Berlin, 22.03.2012*

<http://www.bfr.bund.de/cm/343/elektromagnetische-felder-risikowahrnehmung-in-der-oeffentlichkeit.pdf> (access: 05.11.13)

*Ermittlung der Befürchtungen und Ängste der breiten Öffentlichkeit hinsichtlich möglicher Gefahren der hochfrequenten elektromagnetischen Felder des Mobilfunks - jährliche Umfragen; Deutsches Mobilfunk Forschungsprogramm (DMF), Bundesamt für Strahlenschutz (access: 05.11.13)*

[Deutsches MOBILFUNK Forschungsprogramm](#)

*Ermittlung der Befürchtungen und Ängste der breiten Öffentlichkeit hinsichtlich möglicher Gefahren der hochfrequenten elektromagnetischen Felder des Mobilfunks. Bundesamt für Strahlenschutz (BfS) Hartmann, M. Belz, J. BfS-RESFOR-30/10 (access: 05.11.13)*

[http://doris.bfs.de/jspui/bitstream/urn:nbn:de:0221-201003311009/5/BfS\\_2010\\_3609S80001.pdf](http://doris.bfs.de/jspui/bitstream/urn:nbn:de:0221-201003311009/5/BfS_2010_3609S80001.pdf)

*Risikowahrnehmung und Risikokommunikation im Bereich Niederfrequenter Felder (Im Auftrag des Bundesamtes für Strahlenschutz, BfS. S30015 Abschlussbericht (access: 07.11.13)*

*B. Brohmann, C. Küppers, V. Ustohalova, F. Faulbaum, D. Schreckenberger*

<http://doris.bfs.de/jspui/handle/urn:nbn:de:0221-2009100601>

---

### **Publications and Resources**



#### **"City" instead of "Noise"**

Noise is a major environmental and health problem, especially in cities and metropolitan areas. Therefore, urban planning must develop and implement measures to prevent and protect against noise. In practice, however, noise reduction is often not a leading thought in urban planning. To reduce noise effectively, public authorities and the general public need to work together closely and holistically.

An integrated urban, transport and environmental planning should cover aspects of clean air planning, noise reduction planning, climate protection and, possibly, urban redevelopment in this context. Overall, ambitious noise reduction concepts are urgently needed, because less noise primarily means health protection, health-related quality of life and lower costs and thus comprises many economic, environmental and social synergistic effects.

The new issue of the journal "Information on Spatial Development " shows the noise situation in Germany, describes the legal framework and the health consequences. It also shows solutions and ideas for policy makers and professionals both in the administrative and the private sector, however also illustrates the constraints of political action and planning. [BBSR Homepage - Veröffentlichungen - Stadt statt Lärm](#)

## Literature

In this section we will provide a collection of recent housing and health publications from a variety of backgrounds. Literature published in German or French, respectively, is indicated with the German flag  or the French flag .

If you have suggestions for interesting journals that we should screen for the literature collection, please let us know!

### Table of Topics

Allergies and Respiratory Diseases .....	10
Indoor Air .....	10
Mould and Dampness .....	11
Light and Radiation .....	13
Smoking / Environmental Tobacco Smoke .....	13
Home Safety .....	14
Housing and Ageing Society .....	15
Housing Conditions .....	16
Housing and Mental Health .....	16
Thermal Comfort / Energy .....	17
Urban Planning / Built Environment .....	17
Social Inequality .....	17
Noise .....	19
Miscellaneous .....	19

### Allergies and Respiratory Diseases

#### [Indoor dust and air concentrations of endotoxin in urban and rural environments.](#)

Barnig C, Reboux G, Roussel S, Casset A, Sohy C, Dalphin JC, de Blay F.  
Lett Appl Microbiol. 2013 Mar;56(3):161-7. *Review. Free Article.*

#### [Indoor air contaminants and their impact on respiratory pathologies.](#)

Carazo Fernández L, Fernández Alvarez R, González-Barcala FJ, Rodríguez Portal JA.  
Arch Bronconeumol. 2013 Jan;49(1):22-7.

#### [Renovation activities during pregnancy induce a Th2 shift in fetal but not in maternal immune system.](#)

Herberth G, Herzog T, Hinz D, Röder S, Schilde M, Sack U, Diez U, Borte M, Lehmann I.  
Int J Hyg Environ Health. 2013 Jun;216(3):309-16.

#### [Being overweight increases susceptibility to indoor pollutants among urban children with asthma.](#)

Lu KD, Breyse PN, Diette GB, Curtin-Brosnan J, Aloe C, Williams DL, Peng RD, McCormack MC, Matsui EC.  
J Allergy Clin Immunol. 2013 Apr;131(4):1017-23, 1023.e1-3.

#### [A prospective study of the impact of air pollution on respiratory symptoms and infections in infants.](#)

Stern G, Latzin P, Rössli M, Fuchs O, Proietti E, Kuehni C, Frey U.  
Am J Respir Crit Care Med. 2013 Jun 15;187(12):1341-8.

#### [Household air pollution: a call for studies into biomarkers of exposure and predictors of respiratory disease.](#)

Rylance J, Gordon SB, Naeher LP, Patel A, Balmes JR, Adetona O, Rogalsky DK, Martin WJ 2nd.  
Am J Physiol Lung Cell Mol Physiol. 2013 May 1;304(9):L571-8.

#### [The air quality health index and asthma morbidity: a population-based study.](#)

To T, Shen S, Atenafu EG, Guan J, McLimont S, Stocks B, Liciskai C.  
Environ Health Perspect. 2013 Jan;121(1):46-52. *Free Article.*

**Indoor Air**[Cyanide poisoning by fire smoke inhalation: a European expert consensus.](#)

Anseeuw K, Delvau N, Burillo-Putze G, De Iaco F, Geldner G, Holmström P, Lambert Y, Sabbe M. Eur J Emerg Med. 2013 Feb;20(1):2-9.

[Evaluation of Portable Household and In-Car Air Cleaners for Air Cleaning Potential and Ozone-Initiated Pollutants.](#)

Ongwandee M, Artiya Kruewan A. Indoor and Built Environment. 2013 Aug;22(4):659-668.

[Carbon monoxide exposures and kitchen concentrations from cookstove-related woodsmoke in San Marcos, Peru.](#)

Commodore AA, Hartinger SM, Lanata CF, Mäusezahl D, Gil AI, Hall DB, Aguilar-Villalobos M, Butler CJ, Naehler LP.

Int J Occup Environ Health. 2013 Jan-Mar;19(1):43-54.

[After the PBDE phase-out: a broad suite of flame retardants in repeat house dust samples from California.](#)

Dodson RE, Perovich LJ, Covaci A, Van den Eede N, Ionas AC, Dirtu AC, Brody JG, Rudel RA. Environ Sci Technol. 2012 Dec;46(24):13056-66. **Free Article.**

[The Impact of Air-conditioning Usage on Sick Building Syndrome during Summer in China.](#)

Bin Cao B, Qi Shang Q, Zizhu Dai Z, Zhu Y. Indoor and Built Environment. 2013 Jun;22(3):490-497.

[In-home air filtration for improving cardiovascular health: lessons from a CBPR study in public housing.](#)

Brugge D, Reisner E, Padró-Martínez LT, Zamore W, Owusu E, Durant JL. Prog Community Health Partnersh. 2013 Spring;7(1):49-56.

[Changes in sputum cytology, airway inflammation and oxidative stress due to chronic inhalation of biomass smoke during cooking in premenopausal rural Indian women.](#)

Dutta A, Roychoudhury S, Chowdhury S, Ray MR. Int J Hyg Environ Health. 2013 Jun;216(3):301-8.

[A Framework for Modelling Non-Steady-State Concentrations of Semivolatile Organic Compounds Indoors – I: Emissions from Diffusional Sources and Sorption by Interior Surfaces.](#)

Guo Z. Indoor and Built Environment. 2013 Aug;22(4):685-700.

[In-home air pollution is linked to respiratory morbidity in former smokers with chronic obstructive pulmonary disease.](#)

Hansel NN, McCormack MC, Belli AJ, Matsui EC, Peng RD, Aloe C, Paulin L, Williams DL, Diette GB, Breyse PN.

Am J Respir Crit Care Med. 2013 May 15;187(10):1085-90.

[Long-Term Trend of Indoor Volatile Organic Compounds – a 15-Year Follow-Up Considering Real Living Conditions.](#)

Herbarth O, Matysik S. Indoor and Built Environment August 2013 22: 669-677.

[Associations between brominated flame retardants in house dust and hormone levels in men.](#)

Johnson PI, Stapleton HM, Mukherjee B, Hauser R, Meeker JD. Sci Total Environ. 2013 Feb 15;445-446:177-84.

[Effect of central ventilation and air conditioner system on the concentration and health risk from airborne polycyclic aromatic hydrocarbons.](#)

Lv J, Zhu L. J Environ Sci (China). 2013 Mar 1;25(3):531-6.

[Spatial relationships between lead sources and children's blood lead levels in the urban center of Indianapolis \(USA\).](#)

Morrison D, Lin Q, Wiehe S, Liu G, Rosenman M, Fuller T, Wang J, Filippelli G.  
Environ Geochem Health. 2013 Apr;35(2):171-83.

[Longitudinal relationship between personal CO and personal PM2.5 among women cooking with woodfired cookstoves in Guatemala.](#)

McCracken JP, Schwartz J, Diaz A, Bruce N, Smith KR.  
PLoS One. 2013;8(2):e55670. **Free Article.**

[The University of Michigan Dioxin Exposure Study: estimating residential soil and house dust exposures to young children.](#)

Paustenbach DJ, Kerger BD.  
Chemosphere. 2013 Apr;91(2):200-4.

[Canadian House Dust Study: population-based concentrations, loads and loading rates of arsenic, cadmium, chromium, copper, nickel, lead, and zinc inside urban homes.](#)

Rasmussen PE, Levesque C, Chénier M, Gardner HD, Jones-Otazo H, Petrovic S.  
Sci Total Environ. 2013 Jan 15;443:520-9.

[Increase in vesicular hand eczema after house dust mite inhalation provocation: a double-blind, placebo-controlled, cross-over study.](#)

Schuttelaar ML, Coenraads PJ, Huizinga J, De Monchy JG, Vermeulen KM.  
Contact Dermatitis. 2013 Feb;68(2):76-85.

[Assessment of penetration through vacuum cleaners and recommendation of wet cyclone technology.](#)

Seo Y, Han T.  
J Air Waste Manag Assoc. 2013 Apr;63(4):453-61.

[The contribution of housing renovation to children's blood lead levels: a cohort study.](#)

Spanier AJ, Wilson S, Ho M, Hornung R, Lanphear BP.  
Environ Health. 2013 Aug 27;12(1):72. **Free Article.**

[Concentrations of polybrominated diphenyl ethers \(PBDEs\) in residential dust samples from Western Australia.](#)

Stasinska A, Reid A, Hinwood A, Stevenson G, Callan A, Odland JØ, Heyworth J.  
Chemosphere. 2013 Apr;91(2):187-93.

[Experimental Investigation of Indoor Air Pollutants in Residential Buildings.](#)

Tan CCL, Finney KN, Chen Q, Russell NV, Sharifi VN, Swithenbank J.  
Indoor and Built Environment June 2013 22:471-489.

[Contamination of indoor dust and air by polychlorinated biphenyls and brominated flame retardants and relevance of non-dietary exposure in Vietnamese informal e-waste recycling sites.](#)

Tue NM, Takahashi S, Suzuki G, Isobe T, Viet PH, Kobara Y, Seike N, Zhang G, Sudaryanto A, Tanabe S.  
Environ Int. 2013 Jan;51:160-7.

[Cancer risk from incidental ingestion exposures to PAHs associated with coal-tar-sealed pavement.](#)

Williams ES, Mahler BJ, Van Metre PC.  
Environ Sci Technol. 2013 Jan 15;47(2):1101-9.

[Human exposure to fluorotelomer alcohols, perfluorooctane sulfonate and perfluorooctanoate via house dust in Bavaria, Germany.](#)

Xu Z, Fiedler S, Pfister G, Henkelmann B, Mosch C, Völkel W, Fromme H, Schramm KW.  
Sci Total Environ. 2013 Jan 15;443:485-90.



## Mould and Dampness

### [Indoor environmental exposures for children with asthma enrolled in the HEAL study, post-Katrina New Orleans.](#)

Grimsley LF, Chulada PC, Kennedy S, White L, Wildfire J, Cohn RD, Mitchell H, Thornton E, El-Dahr J, Mvula MM, Sterling Y, Martin WJ, Stephens KU, Lichtveld M.  
Environ Health Perspect. 2012 Nov;120(11):1600-6. *Free Article.*

### [Changes in atmospheric CO2 influence the allergenicity of \*Aspergillus fumigatus\*.](#)

Lang-Yona N, Levin Y, Dannemiller KC, Yarden O, Peccia J, Rudich Y.  
Glob Chang Biol. 2013 Aug;19(8):2381-8.

### [Family and home characteristics correlate with mold in homes.](#)

Reponen T, Levin L, Zheng S, Vesper S, Ryan P, Grinshpun SA, LeMasters G.  
Environ Res. 2013 Jul;124:67-70.

### [Domestic mite antigens in floor and airborne dust at workplaces in comparison to living areas: a new immunoassay to assess personal airborne allergen exposure.](#)

Sander I, Zahradnik E, Kraus G, Mayer S, Neumann HD, Fleischer C, Brüning T, Raulf-Heimsoth M.  
PLoS One. 2012;7(12):e52981.

### [On Associations between Housing Characteristics, Dampness and Asthma and Allergies among Children in Northeast Texas.](#)

Sun Y, Sundell J.  
Indoor and Built Environment. 2013 Aug;22(4):678-684.

### [Higher Environmental Relative Moldiness Index \(ERMI\) values measured in homes of asthmatic children in Boston, Kansas City, and San Diego.](#)

Vesper S, Barnes C, Ciaccio CE, Johanns A, Kennedy K, Murphy JS, Nunez-Alvarez A, Sandel MT, Cox D, Dewalt G, Ashley PJ.  
J Asthma. 2013 Mar;50(2):155-61.

### [Exposure to Airborne Mould in School Environments and Nasal Patency in Children.](#)

Zhang G, Neumeister-Kemp H, Garrett M, Kemp P, Stick S, Franklin P.  
Indoor and Built Environment. 2013 Aug;22(4):608-617.

## Light and Radiation

### [How Do Different Locations, Floors and Aspects Influence Indoor Radon Concentrations? An Empirical Study Using Neural Networks for a University Campus in Northwestern Turkey.](#)

Atik S, Yetis H, Denizli H, Evrendilek F.  
Indoor and Built Environment. 2013 Aug;22(4):650-658.

### [Idiopathic environmental intolerance attributed to electromagnetic fields \(IEI-EMF\): a systematic review of identifying criteria.](#)

Baliatsas C, Van Kamp I, Lebret E, Rubin GJ.  
BMC Public Health. 2012 Aug 11;12:643. *Review. Free Article.*

### [Design of an ecological momentary assessment study of exposure to radiofrequency electromagnetic fields and non-specific physical symptoms.](#)

Bogers RP, Bolte JF, Houtveen JH, Lebret E, van Strien RT, Schipper CM, Alkadhimi M, Baliatsas C, van Kamp I.  
BMJ Open. 2013 Aug 29;3(8):e002933. *Free Article.*

### [Preliminary results regarding the first map of residential radon in some regions in Romania.](#)

Cosma C, Cucos Dinu A, Dicu T.  
Radiat Prot Dosimetry. 2013;155(3):343-50.

[Idiopathic environmental intolerance attributed to electromagnetic fields \(IEI-EMF\) and electrosensitivity \(ES\) - are they connected?](#)

Köteles F, Szemerszky R, Gubányi M, Körmendi J, Szekrényesi C, Lloyd R, Molnár L, Drozdovszky O, Bárdos G.

Int J Hyg Environ Health. 2013 Jun;216(3):362-70.

[Creating smoke-free homes for children.](#)

Shaw A, Ritchie D, O'Donnell R, Amos A, Mills LM, Semple SE, Turner SW, Wilson IS.

Nurs Times. 2013 Mar 12-18;109(10):28-30. [Review.](#)

[Symptom attribution and risk perception in individuals with idiopathic environmental intolerance to electromagnetic fields and in the general population.](#)

van Dongen D, Smid T, Timmermans DR.

Perspect Public Health. 2013 Aug 2. [Epub ahead of print]

[Are media warnings about the adverse health effects of modern life self-fulfilling? An experimental study on idiopathic environmental intolerance attributed to electromagnetic fields \(IEI-EMF\).](#)

Witthöft M, Rubin GJ.

J Psychosom Res. 2013 Mar;74(3):206-12.

[Preliminary risk assessment of radon in groundwater: a case study from Eskisehir, Turkey.](#)

Yuce G, Gasparon M.

Isotopes Environ Health Stud. 2013 Jun;49(2):163-79.

## **Smoking / Environmental Tobacco Smoke**

[Assessing knowledge and attitudes of owners or managers of hospitality venues regarding a policy banning indoor smoking.](#)

Alaaeddine G, Al Kuhaimi T, Al Assaad R, Dany M, Diab R, Hanna E, Hirmas N, Ismail H, Mahmassani D, Sleiman Tellawi R, Nakkash R.

Public Health. 2013 May;127(5):461-6.

[The role of nicotine replacement therapy for temporary abstinence in the home to protect children from environmental tobacco smoke exposure: a qualitative study with disadvantaged smokers.](#)

Atkinson O, Coleman T, McNeill A, Lewis S, Jones LL.

BMC Public Health. 2013 Mar 22;13:262. [Free Article.](#)

[Telephone-assisted placement of air nicotine monitors to validate self-reported smoke-free home policies.](#)

Berg CJ, Bundy L, Escoffery C, Haardörfer R, Kegler MC.

Public Health. 2013 Apr;127(4):342-4.

[Second-hand tobacco smoke and cardiovascular disease risk: an epidemiological review.](#)

Dunbar A, Gotsis W, Frishman W.

Cardiol Rev. 2013 Mar-Apr;21(2):94-100. [Review.](#)

[Third-hand smoke exposure and health hazards in children.](#)

Ferrante G, Simoni M, Cibella F, Ferrara F, Liotta G, Malizia V, Corsello G, Viegi G, La Grutta S.

Monaldi Arch Chest Dis. 2013 Mar;79(1):38-43. [Review.](#)

[Acute impact of active and passive electronic cigarette smoking on serum cotinine and lung function.](#)

Flouris AD, Chorti MS, Poulianiti KP, Jamurtas AZ, Kostikas K, Tzatzarakis MN, Wallace Hayes A, Tsatsaki AM, Koutedakis Y.

Inhal Toxicol. 2013 Feb;25(2):91-101.

[A cross-sectional study of secondhand smoke exposure and respiratory symptoms in non-current smokers in the U.S. trucking industry: SHS exposure and respiratory symptoms.](#)

Laden F, Chiu YH, Garshick E, Hammond SK, Hart JE.

BMC Public Health. 2013 Feb 1;13:93. [Free Article.](#)

[Mother's environmental tobacco smoke exposure during pregnancy and externalizing behavior problems in children.](#)

Liu J, Leung PW, McCauley L, Ai Y, Pinto-Martin J.  
Neurotoxicology. 2013 Jan;34:167-74.

[Passive smoking, invasive meningococcal disease and preventive measures: a commentary.](#)

Rashid H, Booy R.  
BMC Med. 2012 Dec 10;10:160.

## Home Safety

[Preventing unintentional injuries in Indigenous children and youth in Canada.](#)

Banerji A; Canadian Paediatric Society, First Nations, Inuit and Métis Health Committee.  
Paediatr Child Health. 2012 Aug;17(7):393-4. *Free Article.*

[Public Health and Law Collaboration: The Philadelphia Lead Court Study.](#)

Campbell C, Gracely E, Pan S, Cummings C, Palermo P, Gould G.  
Am J Public Health. 2013 Jul;103(7):1271-1277.

[Acute mercury poisoning among children in two provinces of Turkey.](#)

Carman KB, Tutkun E, Yilmaz H, Dilber C, Dalkiran T, Cakir B, Arslantas D, Cesaretli Y, Aykanat SA.  
Eur J Pediatr. 2013 Jun;172(6):821-7.

[Contemporary hazards in the home: keeping children safe from thermal injuries.](#)

Deave T, Goodenough T, Stewart J, Towner E, Majsak-Newman G, Hawkins A, Coupland C, Kendrick D.  
Arch Dis Child. 2013 Jul;98(7):485-9.

[Unintentional domestic non-fire related carbon monoxide poisoning: data from media reports, UK/Republic of Ireland 1986-2011.](#)

Fisher DS, Bowskill S, Saliba L, Flanagan RJ.  
Clin Toxicol (Phila). 2013 Jun;51(5):409-16.

[Child injury: using national emergency department monitoring systems to identify temporal and demographic risk factors.](#)

Hughes K, McHale P, Wyke S, Lowey H, Bellis MA.  
Inj Prev. 2013 Jul 10. [Epub ahead of print]

[Pediatric hydrocarbon-related injuries in the United States: 2000-2009.](#)

Jolliff HA, Fletcher E, Roberts KJ, Baker SD, McKenzie LB.  
Pediatrics. 2013 Jun;131(6):1139-47.

[Root Causes, Clinical Effects, and Outcomes of Unintentional Exposures to Buprenorphine by Young Children.](#)

Lavonas EJ, Banner W, Bradt P, Bucher-Bartelson B, Brown KR, Rajan P, Murrelle L, Dart RC, Green JL.  
J Pediatr. 2013 Aug 22. pii: S0022-3476(13)00817-2. [Epub ahead of print]. *Free Article.*

[Fatal childhood injuries in Finland, 1971-2010.](#)

Parkkari J, Mattila V, Kivistö J, Niemi S, Palvanen M, Kannus P.  
Inj Prev. 2013 Jun;19(3):171-6.

[Healthy Homes/Healthy Kids: A randomized trial of a pediatric primary care-based obesity prevention intervention for at-risk 5-10-year olds.](#)

Sherwood NE, Levy RL, Langer SL, Senso MM, Crain AL, Hayes MG, Anderson JD, Seburg EM, Jeffery RW.  
Contemp Clin Trials. 2013 Jun 28.

## Housing and Ageing Society

### [German health-related environmental monitoring: assessing time trends of the general population's exposure to heavy metals.](#)

Becker K, Schroeter-Kermani C, Seiwert M, Rütter M, Conrad A, Schulz C, Wilhelm M, Wittsiepe J, Günzel A, Dobler L, Kolossa-Gehring M.  
Int J Hyg Environ Health. 2013 Jun;216(3):250-4.

### [Relocation Remembered: Perspectives on Senior Transitions in the Living Environment.](#)

Perry TE, Andersen TC, Kaplan DB.  
Gerontologist. 2013 Jul 9. [Epub ahead of print]

### [Designing a "Think-Along Dwelling" for People With Dementia: A Co-Creation Project Between Health Care and the Building Services Sector.](#)

van Hoof J, Blom MM, Post HNA, Bastein WL.  
Journal of Housing For the Elderly. 2013 Aug;27(3): 299-332.

## Housing Conditions

### [Elderly Mobility and the Occupancy Status of Single-Family Homes.](#)

Aurand A, Reynolds A.  
Housing Studies. 2013 Jan;28(5):661-681.

### [Air pollution and congenital heart defects.](#)

Agay-Shay K, Friger M, Linn S, Peled A, Amitai Y, Peretz C.  
Environ Res. 2013 Jul;124:28-34.

### [Impact of LEED-certified affordable housing on asthma in the South Bronx.](#)

Garland E, Steenburgh ET, Sanchez SH, Geevarughese A, Bluestone L, Rothenberg L, Rialdi A, Foley M.  
Prog Community Health Partnersh. 2013 Spring;7(1):29-37.

### [High diversity of Staphylococcus aureus and Staphylococcus pseudintermedius lineages and toxigenic traits in healthy pet-owning household members. Underestimating normal household contact?](#)

Gómez-Sanz E, Torres C, Lozano C, Zarazaga M.  
Comp Immunol Microbiol Infect Dis. 2013 Jan;36(1):83-94.

### [Ambient air pollution exposures and risk of rheumatoid arthritis: results from the Swedish EIRA case-control study.](#)

Hart JE, Källberg H, Laden F, Bellander T, Costenbader KH, Holmqvist M, Klareskog L, Alfredsson L, Karlson EW.  
Ann Rheum Dis. 2013 Jun;72(6):888-94.

### [Housing, Home and Neighbourhood Renewal in the Era of Superdiversity: Some Lessons from the West Midlands.](#)

Phillimore J.  
Housing Studies. 2013 Jan;28(5):682-700. **Free Article.**

### [Can realtor education reduce lead exposures for vulnerable populations?](#)

Phoenix JA, Green RD, Thompson AM.  
J Environ Health. 2013 Jul-Aug;76(1):28-36.

### [Modeling exposures to organophosphates and pyrethroids for children living in an urban low-income environment.](#)

Wason SC, Julien R, Perry MJ, Smith TJ, Levy JI.  
Environ Res. 2013 Jul;124:13-22.



[Geochemistry and health risk assessment of arsenic exposure to street dust in the zinc smelting district, Northeast China.](#)

Xu S, Zheng N, Liu J, Wang Y, Chang S.  
Environ Geochem Health. 2013 Feb;35(1):89-99.

[Determining the relative importance of soil sample locations to predict risk of child lead exposure.](#)

Zahran S, Mielke HW, McElmurry SP, Filippelli GM, Laidlaw MA, Taylor MP.  
Environ Int. 2013 Aug 22;60C:7-14.

### **Housing and Mental Health**

[Private space second-hand smoke exposure and the mental health of non-smokers: a cross-sectional analysis of Canadian adults.](#)

Asbridge M, Ralph K, Stewart S.  
Addict Behav. 2013 Mar;38(3):1679-86.

### **Thermal Comfort / Energy**

[An Air Distribution Index for Assessing the Thermal Comfort and Air Quality in Uniform and Nonuniform Thermal Environments.](#)

Almesri I, Awbi HB, Foda E, Sirén K.  
Indoor and Built Environment. 2013 Aug;22:618-639.

[A comparative climate analysis of heat-related emergency 911 dispatches: Chicago, Illinois and Phoenix, Arizona USA 2003 to 2006.](#)

Hartz DA, Brazel AJ, Golden JS.  
Int J Biometeorol. 2013 Sep;57(5):669-78.

[Modelling the effects of low indoor temperatures on the lung function of children with asthma.](#)

Pierse N, Arnold R, Keall M, Howden-Chapman P, Crane J, Cunningham M; the Heating Housing and Health Study Group.  
J Epidemiol Community Health. 2013 Aug 12. [Epub ahead of print]

[Impact of Relative Humidity on Thermal Comfort in a Warm Environment.](#)

Jing S, Li B, Tan M, Liu H.  
Indoor and Built Environment. 2013 Aug;22(4):598-607.

[Explaining the individual processes leading to adaptive comfort: Exploring physiological, behavioural and psychological reactions to thermal stimuli.](#)

Schweiker M, Brasche S, Bischof W, Hawighorst M, Wagner A.  
Journal of Building Physics. 2013 Apr 36(4):438-463.

[Thermal stress associated mortality risk and effect modification by sex and obesity in an elderly cohort of Chinese in Hong Kong.](#)

Xu W, Thach TQ, Chau YK, Lai HK, Lam TH, Chan WM, Lee RS, Hedley AJ, Wong CM.  
Environ Pollut. 2013 Jul;178:288-93.

### **Urban Planning / Built Environment**

[Urban Form and Psychosocial Factors: Do They Interact for Leisure-Time Walking?](#)

Beenackers MA, Kamphuis CB, Prins RG, Mackenbach JP, Burdorf A, van Lenthe FJ.  
Med Sci Sports Exerc. 2013 Sep 18. [Epub ahead of print].

[Do neighborhoods make people active, or do people make active neighborhoods? Evidence from a planned community in austin, Texas.](#)

Calise TV, Heeren T, Dejong W, Dumith SC, Kohl HW 3rd.  
Prev Chronic Dis. 2013 Jun 20;10:E102. [Free Article.](#)

[Neighborhood environments, mobility, and health: towards a new generation of studies in environmental health research.](#)

Chaix B, Méline J, Duncan S, Jardinier L, Perchoux C, Vallée J, Merrien C, Karusisi N, Lewin A, Brondeel R, Kestens Y.

Rev Epidemiol Sante Publique. 2013 Aug;61 Suppl 3:S139-45.

[Smart Green Buildings of Tomorrow.](#)

Chao C.

Indoor and Built Environment. 2013 Aug;22(4):595-597.

[Features of perceived neighborhood environment associated with daily walking time or habitual exercise: differences across gender, age, and employment status in a community-dwelling population of Japan.](#)

Chen TA, Lee JS, Kawakubo K, Watanabe E, Mori K, Kitaike T, Akabayashi A.

Environ Health Prev Med. 2013 Sep;18(5):368-76.

[A New Urban Planning Code's Impact on Walking: The Residential Environments Project.](#)

Christian H, Knuiman M, Bull F, Timperio A, Foster S, Divitini M, Middleton N, Giles-Corti B.

Am J Public Health. 2013 Jul;103(7):1219-1228.

[Diabetes distress and neighborhood characteristics in people with type 2 diabetes.](#)

Garipey G, Smith KJ, Schmitz N.

J Psychosom Res. 2013 Aug;75(2):147-52.

[Effectiveness and equity impacts of town-wide cycling initiatives in England: A longitudinal, controlled natural experimental study.](#)

Goodman A, Panter J, Sharp SJ, Ogilvie D.

Soc Sci Med. 2013 Sep 25. doi:pii: S0277-9536(13)00482-6. 10.1016/j.socscimed.2013.08.030.

[Epub ahead of print]

[Sustained impact of community-based physical activity interventions: key elements for success.](#)

Haggis C, Sims-Gould J, Winters M, Gutteridge K, McKay HA.

BMC Public Health. 2013 Sep 27;13(1):892. *Free Article.* [Epub ahead of print]

[Neighborhood Environment and Physical Activity Among Older Women: Findings From the San Diego Cohort of the Women's Health Initiative.](#)

Kerr J, Norman G, Millstein R, Adams MA, Morgan C, Langer RD, Allison M.

J Phys Act Health. 2013 Aug 19. [Epub ahead of print]

[The proportion of youths' physical inactivity attributable to neighbourhood built environment features.](#)

Laxer RE, Janssen I.

Int J Health Geogr. 2013 Jun 18;12(1):31. *Free Article.* [Epub ahead of print]

[TCOPPE School Environmental Audit Tool: Assessing Safety and Walkability of School Environments.](#)

Lee C, Kim HJ, Dowdy DM, Hoelscher DM, Ory MG.

J Phys Act Health. 2013 Sep;10(7):949-60.

[Evaluation of Partnership Working in Cities in Phase IV of the WHO Healthy Cities Network.](#)

Lipp A, Winters T, de Leeuw E.

J Urban Health. 2013 Oct;90 Suppl 1:37-51.

[Bicycling to university: evaluation of a bicycle-sharing program in Spain.](#)

Molina-García J, Castillo I, Queralt A, Sallis JF.

Health Promot Int. 2013 Jun 28. [Epub ahead of print]

[Effects of User Density Levels on Recreational Walking Experiences.](#)

Muderrisoğlu H, Özkan Aydın SÖ, Ak L, Eroğlu E.

Indoor and Built Environment 2013 Aug;22(4):640-649.

[Development of a Pedestrian Audit Tool to Assess Rural Neighborhood Walkability.](#)

Scanlin K, Haardoerfer R, Kegler MC, Glanz K.

J Phys Act Health. 2013 Aug 19. [Epub ahead of print]

## Social Inequality

### [Associations between obesity and asthma in a low-income, urban, minority population.](#)

Dorevitch S, Conroy L, Karadkhele A, Rosul L, Stacewicz-Sapuntzakis M, Fantuzzi G.  
Ann Allergy Asthma Immunol. 2013 May;110(5):340-6.

### [Individual, housing, and neighborhood correlates of asthma among young urban children.](#)

Holt EW, Theall KP, Rabito FA.  
J Urban Health. 2013 Feb;90(1):116-29.

### [The \(enforceable\) right to housing: a paradoxical French passion.](#)

Houard N, Vroelant C.  
International Journal of Housing Policy. 2013 May;13(2): 202-214.

### ["Safe Going": the influence of crime rates and perceived crime and safety on walking in deprived neighbourhoods.](#)

Mason P, Kearns A, Livingston M.  
Soc Sci Med. 2013 Aug;91:15-24.

### [How local contexts influence the neighbourhood satisfaction of displaced tenants in the Netherlands and France.](#)

Posthumus H, Lelévrier C.  
International Journal of Housing Policy. 2013 May;13(2): 134-158.

### [Self-reported bed bug infestation among New York City residents: prevalence and risk factors.](#)

Ralph N, Jones HE, Thorpe LE.  
J Environ Health. 2013 Jul-Aug;76(1):38-45.

### [Green space and stress: evidence from cortisol measures in deprived urban communities.](#)

Roe JJ, Thompson CW, Aspinall PA, Brewer MJ, Duff EI, Miller D, Mitchell R, Clow A.  
Int J Environ Res Public Health. 2013 Sep 2;10(9):4086-103.

### [Contrasting adaptation responses by squatters and low-income tenants in Khulna, Bangladesh.](#)

Roy M, Hulme D, Jahan F.  
Environment and Urbanization April 2013 25: 157-176.

### [Factors that Influence the Outcomes of Single Homeless People's Rehousing.](#)

Anthony M. Warnes, Maureen Crane & Sarah E. Coward.  
Housing Studies. 2013 Jan;28(5):782-798.

## Noise

### [Long-term effects of noise reduction measures on noise annoyance and sleep disturbance: the Norwegian facade insulation study.](#)

Amundsen AH, Klæboe R, Aasvang GM.  
J Acoust Soc Am. 2013 Jun;133(6):3921-8.

### [The effects of low frequency noise on mental performance and annoyance.](#)

Alimohammadi I, Sandrock S, Gohari MR.  
Environ Monit Assess. 2013 Aug;185(8).

### [Is exposure to night-time traffic noise a risk factor for purchase of anxiolytic-hypnotic medication? A cohort study.](#)

Bocquier A, Cortaredona S, Boutin C, David A, Bigot A, Sciortino V, Nauleau S, Gaudart J, Giorgi R, Verger P.  
Eur J Public Health. 2013 Aug 28. [Epub ahead of print]

### [Effects of train noise and vibration on human heart rate during sleep: an experimental study.](#)

Croy I, Smith MG, Waye KP.  
BMJ Open. 2013 May 28;3(5).

[Road traffic noise and annoyance: a quantification of the effect of quiet side exposure at dwellings.](#)

de Kluizenaar Y, Janssen SA, Vos H, Salomons EM, Zhou H, van den Berg F.  
Int J Environ Res Public Health. 2013 Jun 3;10(6):2258-70.

[Does noise affect learning? A short review on noise effects on cognitive performance in children.](#)

Klatte M, Bergström K, Lachmann T.  
Front Psychol. 2013 Aug 30;4:578.

[The ecological context of soundscapes for children's blood pressure.](#)

Lercher P, Evans GW, Widmann U.  
J Acoust Soc Am. 2013 Jul;134(1):773-81.

[Association and moderation of self-reported hypotension with traffic noise exposure: a neglected relationship.](#)

Lercher P, Widmann U.  
Noise Health. 2013 Jul-Aug;15(65):205-16. *Free Article.*

[Blood pressure of urban school children in relation to road-traffic noise, traffic density and presence of public transport.](#)

Paunovic K, Belojevic G, Jakovljevic B.  
Noise Health. 2013 Jul-Aug;15(65):253-60.

[Effect of nighttime aircraft noise exposure on endothelial function and stress hormone release in healthy adults.](#)

Schmidt FP, Basner M, Kröger G, Weck S, Schnorbus B, Muttray A, Sariyar M, Binder H, Gori T, Warnholtz A, Münzel T.  
Eur Heart J. 2013 Jul 2. [Epub ahead of print]

[An epidemiological prospective study of children's health and annoyance reactions to aircraft noise exposure in South Africa.](#)

Seabi J.  
Int J Environ Res Public Health. 2013 Jul 3;10(7):2760-77. *Free Article.*

[On the influence of freight trains on humans: a laboratory investigation of the impact of nocturnal low frequency vibration and noise on sleep and heart rate.](#)

Smith MG, Croy I, Ogren M, Persson Waye K.  
PLoS One. 2013;8(2):e55829. Epub 2013 Feb 7.

[Road traffic noise and health-related quality of life: A cross-sectional study.](#)

Welch D, Shepherd D, Dirks KN, McBride D, Marsh S.  
Noise Health. 2013 Jul-Aug;15(65):224-30.

[Potential health effects of standing waves generated by low frequency noise.](#)

Ziaran S.  
Noise Health. 2013 Jul-Aug;15(65):237-45.

[Annoyance, detection and recognition of wind turbine noise.](#)

Van Renterghem T, Bockstael A, De Weirt V, Botteldooren D.  
Sci Total Environ. 2013 Jul 1;456-457:333-45.

## Miscellaneous

[Titanium dioxide nanoparticles induce matrix metalloprotease 1 in human pulmonary fibroblasts partly via an interleukin-1 \$\beta\$ -dependent mechanism.](#)

Armand L, Dagouassat M, Belade E, Simon-Deckers A, Le Gouvello S, Tharabat C, Duprez C, Andujar P, Pairon JC, Boczkowski J, Lanone S.  
Am J Respir Cell Mol Biol. 2013 Mar;48(3):354-63.



[Economics of climate change adaptation at the local scale under conditions of uncertainty and resource constraints: the case of Durban, South Africa.](#)

Cartwright A, Blignaut J, De Wit M, Goldberg K, Mander M, O'Donoghue S, Roberts D.  
Environment and Urbanization April 2013 25: 139-156.

[Evidence on the impact of sustained exposure to air pollution on life expectancy from China's Huai River policy.](#)

Chen Y, Ebenstein A, Greenstone M, Li H.  
Proc Natl Acad Sci U S A. 2013 Aug 6;110(32):12936-41. *Free Article.*

[Transmission and epidemiology of zoonotic protozoal diseases of companion animals.](#)

Esch KJ, Petersen CA.  
Clin Microbiol Rev. 2013 Jan;26(1):58-85. *Review.*

[High diversity of Staphylococcus aureus and Staphylococcus pseudintermedius lineages and toxigenic traits in healthy pet-owning household members. Underestimating normal household contact?](#)

Gómez-Sanz E, Torres C, Lozano C, Zarazaga M.  
Comp Immunol Microbiol Infect Dis. 2013 Jan;36(1):83-94.

[Health effects of the September 2009 dust storm in Sydney, Australia: did emergency department visits and hospital admissions increase?](#)

Merrifield A, Schindeler S, Jalaludin B, Smith W.  
Environ Health. 2013 Apr 16;12:32.

[An evaluation of the robustness of the visual air quality "preference study" method.](#)

Smith AE.  
J Air Waste Manag Assoc. 2013 Apr;63(4):405-17.

[Modeling of moisture evaporation from the skin, eyes, and airway to evaluate sensations of dryness in low-humidity environments.](#)

Satoru Takada S, Matsushita T.  
Journal of Building Physics. 2013 Apr;36(4):422-437.

---

## Events Announcement

### 4. Innenraumtagung des Arbeitskreises Innenraumluft am Lebensministerium

Date: November 26, 2013

Venue: Vienna, Austria

Further Information: [4. Jahrestagung des Arbeitskreises Innenraumluft am Lebensmittelministerium](#)

### VDI Wissensforum - Bauprodukte und gesunde Innenraumluft

Date: November 27-28, 2013

Venue: Duesseldorf, Germany

Further Information: [VDI Wissensforum: Emissionen Bauprodukte](#)

### VDI - Wissensforum - Schadstoffe in Innenräumen Ursachen - Messstrategie - Bewertung

Date: March 25-26, 2014

Venue: Munich, Germany

Further Information: [VDI Wissensforum: Schadstoffe in Innenräumen](#)

### Indoor Air 2014 - ISIAQ International Society of Indoor Air Quality and Climate

Date: July 7-14, 2014

Venue: Hong Kong, People's Republik of China

Further Information: [Indoor Air 2014 — ISIAQ](#)

**26<sup>th</sup> Conference of the International Society for Environmental Epidemiology ISEE**

Date: August 24-28, 2014

Venue: Seattle / Washington, USA

Further Information: [ISEE - International Society for Environmental Epidemiology](#)**24<sup>th</sup> ISES Annual Meeting**

Date: October 12-16, 2014

Venue: Cincinnati / Ohio, USA

Further Information: [International Society of Exposure Science \(ISES\)](#)

---

**Message Board**

In this section we will inform you about activities and projects related to housing and health that are being carried out by WHO or the WHO CC. This may relate to ongoing activities and projects, as well as invitations to participate in data collections or case study projects.

**WHO work on indoor and built environments****Review of social determinants and the health divide in the WHO European Region. Final report published.**

This review of inequities in health across the 53 Member States of the Region was commissioned to support the development of the new European policy framework for health and well-being, Health 2020. It builds on the global evidence and recommends policies to reduce health inequities and the health divide across all countries, including those with low incomes. One of the many areas covered by the report are inequalities related to housing and settlement conditions.

To access the final report, please go to

[http://www.euro.who.int/data/assets/pdf\\_file/0006/215196/Review-of-social-determinants-and-the-health-divide-in-the-WHO-European-Region-final-report-Eng.pdf](http://www.euro.who.int/data/assets/pdf_file/0006/215196/Review-of-social-determinants-and-the-health-divide-in-the-WHO-European-Region-final-report-Eng.pdf)

**Health 2020. A European policy framework and strategy for the 21st century**

In 2012, the WHO Regional Committee for Europe approved Health 2020 as the new health policy for the WHO Regional office for Europe. The commitment to Health 2020 was repeated at the 63<sup>rd</sup> Regional Committee in 2013. The policy has two strategic objectives, constructed around equity, gender and human rights and improved governance for health. Again, housing and settlement conditions are frequently mentioned as necessary measures for improving health and environments through actions in various settings and by multiple actors.

The full Health 2020 policy framework and the associated strategy can be accessed at:

[http://www.euro.who.int/data/assets/pdf\\_file/0011/199532/Health2020-Long.pdf](http://www.euro.who.int/data/assets/pdf_file/0011/199532/Health2020-Long.pdf)

**Report on the European Environment and Health Process (2010-2013)**

This background document is a full report documenting the implementation of the European Environment and Health Process since 2010. It provides an overview of the recent work done on housing and urban issues as well as all other dimensions covered by the WHO European Centre for Environment and Health.

The report is available at

[http://www.euro.who.int/data/assets/pdf\\_file/0019/200278/63bd-Report-on-the-European-Environment-and-Health-Process-2010-2013.pdf](http://www.euro.who.int/data/assets/pdf_file/0019/200278/63bd-Report-on-the-European-Environment-and-Health-Process-2010-2013.pdf)

**Health and Environment in the WHO European region: Creating resilient communities and supportive environments**

The brochure provides an overview of the work areas of the WHO European Centre for Environment and Health and summarizes the key challenges for the near future.

The brochure can be accessed at

[http://www.euro.who.int/\\_data/assets/pdf\\_file/0005/215645/HEALTH-AND-THE-ENVIRONMENT-IN-THE-WHO-EUROPEAN-REGION-Creating-resilient-communities-and-supportive-environments.pdf](http://www.euro.who.int/_data/assets/pdf_file/0005/215645/HEALTH-AND-THE-ENVIRONMENT-IN-THE-WHO-EUROPEAN-REGION-Creating-resilient-communities-and-supportive-environments.pdf)

**Imprint****Publisher**

Landesgesundheitsamt Baden-Württemberg  
im Regierungspräsidium Stuttgart  
Baden-Württemberg State Health Office

WHO Collaborating Centre for Housing and Health  
Head: Prof. Dr. Günter Schmolz  
Nordbahnhofstrasse 135  
70191 Stuttgart

phone +49 (0)711· 904 35000

fax +49 (0)711· 904 35105

[who.cc@rps.bwl.de](mailto:who.cc@rps.bwl.de)

[www.whocc-housing-and-health.de](http://www.whocc-housing-and-health.de)

The work of the WHO CC on housing and health is funded by *Bundesministerium für Gesundheit (BMG)*, Germany.

**Editors:**

Dr. Bernhard Link, Dr. Annette Rebmann

Dr. Guido Fischer, Dr. Hanswerner Jaroni, Dr. Snezana Jovanovic, Stefan Kluge,  
Dr. Karin Otzelberger