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The English version is a summary of the more extensive situation report bulletin in Finnish.

Opinions and Information Abound on Health Issues Related to Low-Frequency Fields



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No. 01

Editorial

The health impacts of low-frequency electric and magnetic fields are widely discussed nowadays. The first impression is that quite a large amount of new scientific information is generated every year, but it is hard to keep on top of it all. However, I don't think that truly new scientific data is being produced more than before; it is rather that different types of comments and summaries may be being generated in greater abundance.



Thanks to the Internet, it is now possible to acquire and distribute information in a quite efficient way, which is why the existing knowledge is moving more efficiently than it was before. This adds to the feeling of getting more new information than before, making it difficult to discern what is really happening. To keep you and myself better up to date as to what is going on with health issues related to low-frequency electric and magnetic fields, I have promised to edit a situation report bulletin dealing with these issues a couple of times a year.

The goal of this project is to produce situation report bulletins on medical-oriented studies related to electric and magnetic fields for about two years, as these studies are particularly interesting from the perspective of population exposure. The aim is to achieve and maintain a clearer picture of the current situation with regard to different reports/studies and their significance. This will also equip the people working in transmission line projects to discuss the various issues with their interest groups and increase the companies' transparency regarding research data. The project will focus on public exposure and the associated medical issues. The project is being funded by Fingrid Oyj, and the Finnish Ministry of Employment and the Economy is involved in its management group.

In this first review I have included information from a report published by the World Health Organization (WHO) in 2007 and from a report by the European Commission's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR), published in 2009. As to the cancer risk, both of these reports seem to be in line with the earlier statement by WHO's International Agency for Research on Cancer (IARC) that "low-frequency magnetic fields may possibly be carcinogenic". The WHO report also presents some interesting thoughts on electromagnetic hypersensitivity (EHS). From now on, it would be better to talk about idiopathic environmental intolerance with attribution to electromagnetic fields (IEI-EMF). The situation report bulletin also includes ten articles with many interesting observations.

The studies I have summarised often discuss childhood leukaemia, even though childhood sometimes seems to extend up to adulthood. It is essential to notice, however, that only a small portion of childhood leukaemia cases may be caused by magnetic fields. In Finland, the number of such cases is estimated to be 1–2 per year. The flux density limit most often mentioned in these cases is 0.4 μT , which is quite low compared to 100 μT , the limit on acute effects recommended by the EU. Some scientists have suggested adopting even lower flux density values, but, on the whole, however, knowledge of what kind of fields people are exposed to over their lifetime is still rather limited.

It will be interesting to see what kind of new information I will find for the next review. According to the website of the International Commission on Non-Ionizing Radiation Protection (ICNIRP), they are going to update their guidelines related to exposure to low-frequency fields. That website will thus be one of the potential sources of new information.

I hope you enjoy reading this first brief summary!

Leena Korpinen
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The Finnish situation report bulletin includes summaries of the following publications, preceded by the editor-in-chief's comments.



No. 02

Information on Health Issues Related to Low-Frequency Fields Available in the New WHO Report

Editor-in-chief's comment: the WHO report suggests that electromagnetic hypersensitivity should be called idiopathic environmental intolerance with attribution to electromagnetic fields (IEI-EMF).

Source:

WHO: Extremely Low Frequency Fields Environmental Health Criteria Monograph No.238, 2007

No. 03

SCENIHR Updated Its View

Editor-in-chief's comment: According to SCENIHR, the EU Commission's independent Scientific Committee on Emerging and Newly Identified Health Risks, low-frequency magnetic fields are still potentially carcinogenic.

Source:

Scientific Committee on Emerging and Newly Identified Health Risks
SCENIHR, Health Effects of Exposure to EMF, European Commission 2009

No. 04

Night-time Exposure to Electromagnetic Fields and Childhood Leukaemia

Editor-in-chief's comment: The method of exposure measurement had no influence on the result.

Source:

Schüz J, Svendsen AL, Linet MS, McBride ML, Roman E, Feychting M, Kheifets L, Lightfoot T, Mezei G, Simpson J and Ahlbom A. Nighttime exposure to electromagnetic fields and childhood leukemia: An extended pooled analysis. American Journal of Epidemiology 2007;166(3):263-269



No. 05

A Study of Occupational Magnetic Field Exposure and Alzheimer's Disease: Results from Californian Treatment Centres

Editor-in-chief's comment: There seems to be some kind of a link between Alzheimer's disease and magnetic field exposure.

Source:

Davanipour Z, Tseng CC, Lee PJ, Sobel E. A case-control study of occupational magnetic field exposure and Alzheimer's disease: results from the California Alzheimer's Disease Diagnosis and Treatment Centers. *BMC Neurology* 2007;7:13

No. 06

Magnetic Field Exposure and Prognostic Factors in Childhood Leukaemia

Editor-in-chief's comment: According to the study, exposure to magnetic fields is not associated with such clinical factors at the time of diagnosis as would predict poor survival (prognostic factors).

Source:

Foliar DE, Mezei G, Iriye R, Silva JM, Ebi KL, Kheifets L, Link MP, Kavet R and Pollock BH. Magnetic field exposure and prognostic factors in childhood leukemia. *Bioelectromagnetics* 2007; 28(1):69-71

No. 07

Magnetic Field Exposure and Survival After Diagnosis of Childhood Leukaemia: A German Cohort Study

Editor-in-chief's comment: Researchers suggest that there may be some connections between magnetic field exposure and survival after diagnosis of childhood leukaemia.

Source:

Svendsen AL, Weihkopf T, Kaatsch P and Schüz J. Exposure to magnetic fields and survival after diagnosis of childhood leukemia: a German cohort study. *Cancer Epidemiology, Biomarkers & Prevention* 2007;16(6):1167-1171



No. 08

Magnetic Fields and Acute Leukaemia in Children with Down's Syndrome

Editor-in-chief's comment: An interesting observation: high exposure to magnetic fields could be associated with the development of acute leukaemia in children with Down's syndrome.

Source:

Mejia-Arangure JM, Fajardo-Gutierrez A, Perez-Saldivar ML, Gorodezky C, Martinez-Avalos A, Romero-Guzman L, Campo-Martinez MA, Flores-Lujano J, Salamanca-Gomez F and Velasquez-Perez L. Magnetic fields and acute leukemia in children with Down syndrome. *Epidemiology* 2007;18(1):158-161

No. 09

Mortality from Neurodegenerative Disease and Exposure to Extremely Low-Frequency Magnetic Fields – 31 Years of Observations on Swiss Railway Employees

Editor-in-chief's comment: An interesting observation: the hazard ratio for train drivers exposed to magnetic fields (exposure level 21 μ T) for senile dementia mortality was 1.96 and for Alzheimer's disease 3.15 compared to less exposed station masters.

Source:

Röösli M, Lörtscher M, Egger M, Pfluger D, Schreier N, Lörtscher E, Locher P, Spoerri A and Minder C. Mortality from neurodegenerative disease and exposure to extremely low-frequency magnetic fields: 31 years of observations on Swiss railway employees. *Neuroepidemiology* 2007;28(4):197-206

No. 10

Mortality from Alzheimer's, Motor Neuron and Parkinson's Disease in Relation to Magnetic Field Exposure: Findings from the Study of UK Electricity Generation and Transmission Workers, 1973–2004

Editor-in-chief's comment: The study did not find convincing evidence of electricity generation and transmission workers in England and Wales having increased risk of dying from neurodegenerative diseases as a consequence of exposure to magnetic fields.

Source:

Sorahan T and Kheifets L. Mortality from Alzheimer's, motor neurone and Parkinson's disease in relation to magnetic field exposure: findings from the study of UK electricity



generation and transmission workers, 1973-2004. *Occupational and Environmental Medicine* 2007; 64; 820-826

No. 11

Occupational Exposure to Low-Frequency Magnetic Fields and Dementia

Editor-in-chief's comment: The study did not find a significant relationship between exposure to magnetic fields and dementia. It was discovered that blue-collar occupations (electrical and electronics workers, metal workers, construction workers, food and beverage processors and labourers) had an increased risk of dementia, but the nature of the occupation was considered a more probable explanation than magnetic fields.

Source:

Seidler A, Geller P, Nienhaus A, Bernhardt T, Ruppe I, Eggert S, Hietanen M, Kauppinen T and Frölich L. Occupational exposure to low frequency magnetic fields and dementia: a case-control study. *Occupational and Environmental Medicine* 2007;64(2):108-114

No. 12

Residential Magnetic Fields, Medication Use, and the Risk of Breast Cancer

Editor-in-chief's comment: The study did not find evidence of a connection between an increased level of night-time magnetic field in the bedroom and breast cancer, regardless of medication use. The results support previous findings that magnetic field exposure does not increase breast cancer risk.

Source:

Davis S and Mirick DK. Residential magnetic fields, medication use, and the risk of breast cancer. *Epidemiology* 2007;18(2):266-269

No. 13

Residential Magnetic Field Exposure and Childhood Brain Cancer

Editor-in-chief's comment: No evidence of a link between magnetic field exposure and increased risk of childhood brain cancer was found. According to the researchers, however, a moderate risk increase with exposures of more than 0.3 or 0.4 μT could not be excluded.



Source:

Mezei G, Gadallah M and Kheifets L. Residential magnetic field exposure and childhood brain cancer: a meta-analysis. *Epidemiology* 2008;19(3):424-430

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