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

A Range of Perspectives: Electric and Magnetic Field Exposure of Children, Pregnant Women and Workers Being Studied



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No. 01

Editorial

2014 has started briskly for research into electromagnetic fields, with several international events having already taken place. In Paris, there was a seminar related to the new EU directive called “The Occupational Health Professionals and the Exposures to Electromagnetic Fields (EMF): What about the Directive 2013/35/EU” that had about a hundred participants. The preparation of national regulations related to this directive is still underway.



In March, the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) organized a public hearing on their new report that discusses electromagnetic fields and health. The event was named “Public hearing of the SCENIHR new opinion on EMF and potential health effects & workshop on electromagnetic fields and health effects: from science to policy and public awareness – Conciliating scientific findings and uncertainties in policy making”. The event focused on discussing the SCENIHR publication “Preliminary opinion on potential health effects of exposure to electromagnetic fields (EMF)”, which has been available for comments on the SCENIHR website since 4 February 2014. The presentations given at the public hearing are also available on the website.

The topic is the focus of other conferences too, including the BioEM2014 in South Africa in June, jointly organized by the Bioelectromagnetics Society (BEMS) and the European BioElectromagnetics Association (EBEA).

Once again, I have found some fascinating scientific articles for this bulletin. This time, I decided to start with three articles that explore the potential effects of magnetic field exposure on a fetus. There have not been many articles on this topic in previous bulletins. Three articles on the same subject may sound surprising, but a closer look reveals that two of the articles come from the same research group. In the latter article, the researchers evaluate possible shortcomings in their research, which is why I thought it was worth sharing.

There is a plan in the Netherlands to conduct a quasi-experimental study on the health effects caused by a new high-voltage power line. ‘Quasi-experimental study’ refers to an experimental-type study in which the criteria of a genuine experimental study cannot be met. The idea is that the study can increase theoretical understanding of the psychosocial mechanisms that are at work when new health risks related to the environment emerge. I’m really looking forward to hearing their results.

As usual, I have included articles on childhood leukemia. This time I also found an article that discusses the association between magnetic field exposure and the risk of leukemia amongst electricity supply workers. The article on these workers concludes the bulletin, preceded by another interesting article on occupational exposure.

Hope you enjoy reading this summary in English!

Leena Korpinen,
Editor-in-chief, Situation Report Bulletin
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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

Residential Distance at Birth from Overhead High-Voltage Powerlines: Childhood Cancer Risk in Britain 1962-2008

Editor-in-chief's comment: The group extended their previous study of the connection between childhood leukemia and living close to high-voltage power lines. Examining various time periods, the researchers found out that the risk of leukemia declines over time. They think the result may possibly be due to changing population characteristics among those living near power lines.

Source:

Bunch K J, Keegan T J, Swanson J, Vincent T J, Murphy M F G. Residential distance at birth from overhead high-voltage powerlines: childhood cancer risk in Britain 1962-2008. *British Journal of Cancer* (2014), 1-7.

No. 03

Maternal Residential Proximity to Sources of Extremely Low Frequency Electromagnetic Fields and Adverse Birth Outcomes in a UK Cohort

Editor-in-chief's comment: The research group examined the possibility of exposure to extremely low-frequency electromagnetic fields being associated with adverse effects on fetal development. They calculated maternal residential proximity to various ELF-EMF sources. They observed some kind of association between birth weight and possible exposure but no association with preterm birth. However, only a few pregnant women lived close to any ELF-EMF sources, which weakens the weight of the results.

Source:

de Vocht F, Hannam K, Baker P, Agius R. Maternal residential proximity to sources of extremely low frequency electromagnetic fields and adverse birth outcomes in a UK Cohort. *Bioelectromagnetics* 35:201-209 (2014).

No. 04

Residential Proximity to Electromagnetic Field Sources and Birth Weight: Minimizing Residual Confounding

Editor-in-chief's comment: The researchers of the previous article (no. 3) re-examined their data to minimize some confounding factors. For example, data on maternal smoking during pregnancy was only available for a small subgroup, and residual confounding could not be excluded. Using the adjusted data, they found out that the change in birth weight was smaller.



Hopefully, the effect of smoking can be taken into account for all pregnant women in future studies.

Source:

de Vocht F, Lee B. Residential proximity to electromagnetic field sources and birth weight: Minimizing residual confounding using multiple imputation and propensity score matching. *Environment International* 69 (2014) 1-57.

No. 05

Residential Exposure to 50 Hz Magnetic Fields and the Association with Miscarriage Risk: A 2-Year Prospective Cohort Study in China

Editor-in-chief's comment: In a two-year study, the research group examined the association between residential exposure to 50 Hz magnetic fields and miscarriage risk in two cities in China. They observed no association between miscarriages and the magnetic field exposure measured at the front door. Maximum magnetic field exposure measured in the alley was, however, associated with miscarriages. The researchers say their results did not confirm the association between miscarriage risk and the exposure to magnetic fields.

Source:

Wang Q, Cao Z, Qu Y, Peng X, Guo S, Chen L. Residential exposure to 50 Hz magnetic fields and the association with miscarriage risk: A 2-year prospective cohort study. *PLoS ONE* 8(12): e82113 (2013).

No. 06

Potential Role of Selection Bias in the Association between Childhood Leukemia and Residential Magnetic Fields Exposure: A Population-Based Assessment

Editor-in-chief's comment: Using the data from their earlier Northern California Childhood Leukemia Study, the research group examined the potential role of selection bias. The researchers did not consider selection biases to be significant in this study, but thought they might have contributed to the higher risk estimates in earlier studies.

Source:

Slusky D A, Does M, Metayer C, Mezei G, Selvin S, Buffler P A. Potential role of selection bias in the association between childhood leukemia and residential magnetic fields exposure: A population-based assessment. *Cancer Epidemiology* 38 (2014) 307-313.



No. 07

Health Responses to a New High-Voltage Power Line Route: Design of a Quasi-Experimental Prospective Field Study in the Netherlands

Editor-in-chief's comment: The research group is developing a field study that includes two pretests during the construction of a new power line, and two posttests after the line has been put into operation. The researchers' plan is to use structural equation models to test to what extent health complaints are influenced by psychosocial health mechanisms and negative oriented personality traits.

Source:

Porsius J T, Claassen L, Smid T, Woudenberg F, Timmermans D RM. Health responses to a new high-voltage power line route: design of a quasi-experimental prospective field study in the Netherlands. *BMC Public Health* 2014, 14:237.

No. 08

No Effects of Extremely Low Frequency Electromagnetic Field Exposure on Selected Neurobehavior Tests of Workers Inspecting Transformers and Distribution Line Stations versus Controls

Editor-in-chief's comment: The research group used neurobehavior tests to study workers performing inspections close to transformers and distribution power lines. The researchers' aim was to find out which functions of the central nervous system could be affected by the exposure and whether any effects of long-term exposure could be observed. No changes were observed.

Source:

Li L, Xiong D, Liu J, Li Z, Zeng G, Li H. No effects of power line frequency extremely low frequency electromagnetic field exposure on selected neurobehavior tests of workers inspecting transformers and distribution line stations versus controls. *Australas Phys Eng Sci Med* (2014) 37:37-44

No. 9

Magnetic Fields and Leukaemia Risks in UK Electricity Supply Workers

Editor-in-chief's comment: The research group found no connection between electricity supply workers' occupational exposure to magnetic fields and their risk of developing leukemia.



Source:

**Sorahan T. Magnetic fields and leukaemia risks in UK electricity supply workers.
Occupational Medicine 2014; 64:150-156**

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