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

Situation Report Bulletins on the Possible Health Effects of Exposure to Electric and Magnetic Fields Have Now Been Produced for Five Years



Situation Report Bulletin 2 / 2013 - published 18 December 2013

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Tampere University of Technology, Department of Electronics and Communications Engineering
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No. 01

Editorial

I have started several earlier editorials by sharing the latest about the EU Directive on workers' exposure to electromagnetic fields, but this time I'll make an exception. I just realized that this is the tenth situation report bulletin to be published, which means we are now completing the fifth year of these bulletins. It is nice to see that they have continued to attract interest.



The new Directive 2013/35/EU of the European Parliament and of the Council on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) was finally completed at the end of June. The Directive applies to the member states of the European Union, with the obligation of transposition into national law (by 1 July 2016). After that, it will apply to workplaces. As far as I know, this preparation is now underway in Finland.

In April 2014 there will be a seminar in Paris called “The Occupational Health Professionals and the Exposures to Electromagnetic Fields (EMF): what about the Directive 2013/35/EU”, with Finnish experts actively involved in organizing the event.

The CIGRE 3rd International Colloquium on Low Frequency Electric and Magnetic Fields (EMF-ELF-2013) was held in Japan in October. The event clearly showed that the health issues related to these fields are common worldwide. There were presentations from around the world.

Again, I have found some interesting scientific articles for this bulletin from different corners of the world. This time I have included several articles that discuss the association between the magnetic field caused by power lines and childhood leukemia or other cancers. While selecting the articles I started to wonder if there would be any space left for other topics, since there were so many fascinating articles on childhood leukemia and cancer. On closer reading you can see that the topic has been studied from a variety of perspectives. One of the aims has been to repeat the earlier results and perhaps conduct exposure assessment better than before.

One article discusses occupational exposure, with a focus on magnetic field exposure and its possible association with certain types of cancer. This Dutch cohort study had a follow-up period of more than 17 years, which makes it quite interesting.

I'll conclude the bulletin with a study that examines the risk perception of electromagnetic fields in Taiwan. Its results are based on telephone interviews. I think it will bring some variety to complement the other articles.

Hope you enjoy reading this summary in English!

Leena Korpinen,
Editor-in-chief, Situation Report Bulletin
Tampere University of Technology, Environmental Health

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



No. 02

Potential Health Impacts of Residential Exposures to Extremely Low Frequency Magnetic Fields in Europe

Editor-in-chief's comment: The group estimated the distributions of exposure to extremely low frequency magnetic fields in the EU member countries using studies identified in the existing literature. According to these researchers, the results proved quite uncertain due to the scarce data on exposure and the choice of exposure-response model. They thought it will be important to conduct further research on this topic.

Source:

Grellier J, Ravazzani P, Cardis E. Potential health impacts of residential exposures to extremely low frequency magnetic fields in Europe. *Environment International* 62 (2014) 55–63.

No. 03

Epidemiologic Study of Residential Proximity to Transmission Lines and Childhood Cancer in California: Description of Design, Epidemiologic Methods and Study Population

Editor-in-chief's comment: The research group conducted an epidemiological case-control study in California to examine the association between the risk of childhood cancer and the distance from the home address at birth to the nearest high-voltage overhead transmission line. The researchers presented a detailed description of the study design, methods of case ascertainment, control selection, exposure assessment and data analysis plan. They compared, for example, distance measurements based on a geographic information system (GIS) and Google Earth, and they showed close agreement.

Source:

Kheifets L, Crespi C M, Hooper C, Oksuzyan S, Cockburn M, Ly T, Mezei G. Epidemiologic study of residential proximity to transmission lines and childhood cancer in California: description of design, epidemiologic methods and study population. *Journal of Exposure Science and Environmental Epidemiology* advance online publication, 18 September 2013.

No. 04

Methods Used to Estimate Residential Exposure to 50 Hz Magnetic Fields from Overhead Power Lines in an Epidemiological Study in France

Editor-in-chief's comment: An epidemiological case-control study is currently being carried out in France to examine the relationship between pediatric cancers and various environmental factors, such as the proximity of children's residences to high-voltage overhead lines (63–400 kV). The research group has determined three criteria for examining the exposure to extremely low frequency magnetic fields from overhead power lines: 'distance', 'distance-voltage' and 'calculated residential exposure'. The article describes the



methods for generating and characterizing these three criteria and the influence of the input data in terms of uncertainties in determining the exposure to ELF-MF assigned to subjects.

Source:

Bessou J, Deschamps F, Figueroa L, Cougnaud D. Methods used to estimate residential exposure to 50 Hz magnetic fields from overhead power lines in an epidemiological study in France. *J. Radiol. Prot.* 33 (2013) 349–365.

No. 05

Distance from Residence to Power Line and Risk of Childhood Leukemia: a Population-Based Case-Control Study in Denmark

Editor-in-chief's comment: The research group wanted to replicate in Denmark an earlier British study by Draper that had suggested that the magnetic field may not necessarily explain the association between proximity of residence to high-voltage power lines and risk of childhood leukemia. The researchers found no higher risk of leukemia for children living 0–199 m or 200–599 m away from overhead power lines. When they restricted the analysis to 220–400 kV power lines, the odds ratio for children who lived 200–599 m from a power line was 1.76 compared to children who lived at least 600 m away. They think, however, that chance was a likely explanation for this finding.

Source:

Pedersen C, Raaschou-Nielsen O, Hulvej Rod N, Frei P, Harbo Poulsen A, Johansen C, Schüz J. Distance from residence to power line and risk of childhood leukemia: a population-based case-control study in Denmark. *Cancer Causes Control* 2013.

No. 06

Residential Mobility of Populations Near UK Power Lines and Implications for Childhood Leukaemia

Editor-in-chief's comment: The author examined an alternative hypothesized explanation that there is greater population mobility near power lines, and this would explain the findings in earlier epidemiological studies of the association between childhood leukemia and living near high-voltage power lines. Earlier results by Kinlen suggest that population mixing increases leukemia rates. The author did not find clear evidence of people living near power lines moving house more often than the population as a whole. However, due to the limitations in the research methods, this possibility could not be completely ruled out either.

Source:

Swanson J. Residential mobility of populations near UK power lines and implications for childhood leukaemia. *J. Radiol. Prot.* 33 (2013).



Residential Distance to High-Voltage Power Lines and Risk of Neurodegenerative Diseases: a Danish Population-Based Case-Control Study

Editor-in-chief's comment: The research group investigated the possible association between residential distance to high-voltage power lines and neurodegenerative diseases, especially Alzheimer's disease. They wanted to replicate an earlier Swiss study that had found increased risk of Alzheimer's disease for people living within 50 m of a power line. The group found that the risks for developing dementia, Parkinson's disease, multiple sclerosis or motor neuron disease were not increased in people living in the vicinity of power lines. In addition, the risk of Alzheimer's disease was not increased for people who had lived within 50 m of a power line at some point in their lives.

Source:

Frei P, Harbo Poulsen A, Mezei G, Pedersen C, Cronberg Salem L, Johansen C, Rösli M, Schüz J. Residential distance to high-voltage power lines and risk of neurodegenerative diseases: a Danish population-based case-control study. *Am J Epidemiol.* 2013;177(9):970-978.

Occupational Extremely Low-Frequency Magnetic Field Exposure and Selected Cancer Outcomes in a Prospective Dutch Cohort

Editor-in-chief's comment: This publication is based on a prospective Dutch cohort study of the potential association between exposure to occupational extremely low frequency magnetic fields and the risk of lung, breast and brain cancer, and hemato-lymphoproliferative malignancies. The follow-up period was 17.3 years. The research group found an association between increased risk of acute myeloid leukemia and follicular lymphoma among men with occupational exposure to extremely low frequency magnetic fields if the worker had ever been exposed to high levels of ELF-MF. They think their findings warrant further investigation.

Source:

Koeman T, van den Brandt P A, Slottje P, Schouten L J, Goldbohm R A, Kromhout H, Vermeulen R. Occupational extremely low-frequency magnetic field exposure and selected cancer outcomes in a prospective Dutch cohort. *Cancer Causes Control*, Published online 16 November 2013.



Risks Perception of Electromagnetic Fields in Taiwan: the Influence of Psychopathology and the Degree of Sensitivity to Electromagnetic Fields

Editor-in-chief's comment: Based on interviews, the research group discovered that psychological conditions might affect the way in which people perceive risks in general without affecting the relationship between the degree of sensitivity to electromagnetic fields and risk perception.

Source:

Tseng M-C M, Lin Y-P, Hu F-C, Cheng T-J. Risks perception of electromagnetic fields in Taiwan: the influence of psychopathology and the degree of sensitivity to electromagnetic fields. *Risk Analysis*, Vol. 33, No. 11, 2013.

Editorial staff

Editor-in-chief: Leena Korpinen

Editorial assistant: Sonator Oy

Graphic and technical realisation: Zento Oy

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