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

The National Regulation Governing Occupational Exposure to Electromagnetic Fields Now in Force – Minor Effects

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No. 01

Editorial

The Finnish Government Decree (388/2016) relating to the Directive 2013/35/EU on the "minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields)" came into force on 1 July 2016. Moreover, a practical guide has been issued, with advice on how to control hazards caused by electromagnetic fields in workplaces.

The Decree sets out different limit values for electromagnetic fields, including (1) exposure limit values (ELVs), (2) health effects ELVs, (3) sensory effects ELVs as well as (4) low and high action levels. In practice, exposure is usually measured against action levels. The low action level for electric

fields (50 Hz) arising from the electrical system is 10 kV/m, while the high action level is 20 kV/m. For magnetic fields (50 Hz), the levels are 1 000 µT and 6 000 µT.

The summer was also packed with different congresses. One of the themes covered by the BioEM2016 conference, held in June in Ghent, Belgium, was the adoption of the above-mentioned Directive in different countries. The discussions revealed that quite a few questions are still open around Europe. It will apparently take some more time before all the necessary standards and other possible guidelines are in place. It is my understanding that our electrical system has a high level of compliance with the Decree in terms of electromagnetic fields, making any large-scale surveys unnecessary in the future.

I have once again found some interesting publications for this bulletin. As many times before, the first papers are about field exposure and childhood leukemia, this time including one on the European Commission-funded ARIMMORA project, which I expect to produce further interesting publications later on.

Another paper reports on a study that investigated the perceived quality of life, among other things, in people with idiopathic environmental intolerance attributed to electromagnetic fields. Hopefully, research will find means to help those suffering from these symptoms. The last paper in this situation report bulletin reports the results of a meta-analysis of associations of parental occupational exposure to extremely low-frequency magnetic fields with childhood leukemia risk.

Finally, I would like to mention that this is the first situation report bulletin produced outside Tampere University of Technology. I found interesting new challenges outside TUT, but the situation report bulletin will continue despite the change.

Hope you enjoy reading this summary in English!

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

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No. 02

Epidemiological Study of Power Lines and Childhood Cancer in the UK: Further Analyses

Editor-in-chief's comment: The researchers report new analyses from an epidemiological case-control study of childhood cancer and residence at birth near power lines in the UK. Various analyses were performed from different aspects, but the results were judged not to be robust enough to draw firm conclusions. The researchers suggest that the possible association of power lines with childhood leukemia might be explained by some link between the presence of a power line and socioeconomic or demographic factors.

Source:
Bunch K J, Swanson J, Vincent T J, Murphy M F G. Epidemiological study of power lines and childhood cancer in the UK: further analyses. Journal of Radiological Protection 36 (2016) 437–455. DOI:10.1088/0952-4746/36/3/437.

No. 03

Extremely Low-Frequency Magnetic Fields and Risk of Childhood Leukemia: A Risk Assessment by the ARIMMORA Consortium

Editor-in-chief's comment: The authors report results from the European Commission-funded ARIMMORA project that investigated interaction mechanisms of electromagnetic exposures with organisms. In their view, the project confirmed that the relationship between magnetic fields and childhood leukemia remains consistent with possible carcinogenicity in humans.

Source:
Schüz J, Dasenbrock C, Ravazzani P, Röösli M, Schär P, Bounds P L, Erdmann F, Borkhardt A, Cobaleda C, Fedrowitz M, Hamnerius Y, Sanchez-Garcia I, Seger R, Schmiegelow K, Ziegelberger G, Capstick M, Manser M, Müller M, Schmid C D, Schürmann D, Struchen B, Kuster N. Extremely Low-Frequency Magnetic Fields and Risk of Childhood Leukemia: A Risk Assessment by the ARIMMORA Consortium. Bioelectromagnetics 37 (2016) 183–189. DOI: 10.1002/bem.21963.

No. 04

Childhood Leukemia and Distance from Power Lines in California: A Population-Based Case-Control Study

Editor-in-chief's comment: The researchers conducted a case-control study of the childhood leukemia risk in the population living near power lines in California using birth and cancer registries. The study included 5 788 cases of childhood leukemia and, for comparison, 3 308 cases of central nervous system cancer, and controls. The researchers found, at most, weak support for an increased leukemia risk for children with birth residence in close proximity to power lines.

Source:
Crespi C M, Vergara X P, Hooper C, Oksuzyan S, Wu S, Cockburn M, Kheifets L. Childhood leukaemia and distance from power lines in California: a population-based case-control study. British Journal of Cancer 115 (2016) 122–128. DOI: 10.1038/bjc.2016.142.

No. 05

Systematic Review of the Exposure Assessment and Epidemiology of High-Frequency Voltage Transients

Editor-in-chief's comment: The authors were interested in the adverse health effects of 50/60-Hz voltage transients, or so-called dirty electricity. They reviewed, both authors independently, the available peer-reviewed studies on the subject. They concluded that the available evidence for adverse health effects of exposure to dirty electricity does not stand up to scientific scrutiny.

Source:
de Vocht F, Olsen R G. Systematic Review of the Exposure Assessment and Epidemiology of High-Frequency Voltage Transients. Frontiers in Public Health 4:52 (2016).
DOI: 10.3389/fpubh.2016.00052.

No. 06

Psychological Symptoms and Health-Related Quality of Life in Idiopathic Environmental Intolerance Attributed to Electromagnetic Fields

Editor-in-chief's comment: The researchers explored the etiology of idiopathic environmental intolerance attributed to electromagnetic fields (IEI-EMF). In a study with some 100 participants with IEI-EMF and approximately the same number of referents, they assessed psychological symptoms and health-related quality of life using questionnaires. They suggested that IEI-EMF is associated with various types of psychological symptoms and with a poor quality of life.

Source:
Kjellqvist A, Palmquist E, Nordin S. Psychological symptoms and health-related quality of life in idiopathic environmental intolerance attributed to electromagnetic fields. Journal of Psychosomatic Research 84 (2016) 8–12. DOI: 10.1016/j.jpsychores.2016.03.006.

No. 07

Exposure to Power-Frequency Magnetic Fields and the Risk of Infertility and Adverse Pregnancy Outcomes: Update on the Human Evidence and Recommendations for Future Study Designs

Editor-in-chief's comment: In an attempt to discover whether exposure to power-frequency magnetic fields could be one of the etiologic factors in infertility and adverse pregnancy outcomes, the researchers provided an overview and critical analysis of peer-reviewed epidemiological studies published between 2002 and July 2015. Due to the conflicting results, they concluded that more epidemiological research is needed.

Source:
Lewis R C, Hauser R, Maynard A D, Neitzel R L, Wang L, Kavet R, Meeker J D. Exposure to Power-Frequency Magnetic Fields and the Risk of Infertility and Adverse Pregnancy Outcomes: Update on the Human Evidence and Recommendations for Future Study Designs. Journal of Toxicology and Environmental Health, Part B, 19 (2016) 29–45. DOI: 10.1080/10937404.2015.1134370.

No. 08

Genetic Damage in Humans Exposed to Extremely Low-Frequency Electromagnetic Fields

Editor-in-chief's comment: The researchers conducted an evaluation of 22 cytogenetic biomonitoring studies in order to investigate the possible association between genetic damage and exposure to electromagnetic fields. They identified many shortcomings in the studies, but due to the fact that only five of them did not show any cytogenetic damage, the researchers were of the opinion that the studies cannot be simply disregarded.

Source:
Maes A, Verschaeve L. Genetic damage in humans exposed to extremely low frequency electromagnetic fields. Archives of Toxicology 2016. DOI 10.1007/s00204-016-1769-9.

No. 09

Associations of Parental Occupational Exposure to Extremely Low-Frequency Magnetic Fields with Childhood Leukemia Risk

Editor-in-chief's comment: According to the authors, studies on the association of parental occupational exposure to extremely low-frequency magnetic fields with childhood leukemia risk have produced inconsistent results. To reevaluate the association, they performed a meta-analysis. The results showed that neither maternal nor paternal occupational exposure was associated with childhood leukemia risk.

Source:
Su L, Fei Y, Wei X, Guo J, Jiang X, Lu L, Chen G. Associations of parental occupational exposure to extremely low-frequency magnetic fields with childhood leukemia risk. Leukemia & Lymphoma 2016. DOI: 10.3109/10428194.2016.1165812.

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