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

Possible Effects of Exposure to Extremely Low-Frequency Electric and Magnetic Fields Being Investigated in Several Countries

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Tampere University of Technology, Department of Energy and Process Engineering
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No. 01

Editorial

It is time once again for a new situation report bulletin, and, as usual, I shall start by sharing the latest about the EU Directive being prepared on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields). As far as I know, the Directive has moved forward within EU institutions, but it has not yet reached its final form. There is some information about the current version available on the Internet in individual people's presentation material, but, in any case, the preparation is still in progress.

Several interesting conferences or other events have been organised in the past six months. Two examples worth mentioning are the 34th Annual Meeting of the Bioelectromagnetics Society (BEMS), held in Brisbane, Australia, in June, and the 7th International Workshop on Biological Effects of Electromagnetic Fields in Malta in October. Both of these conferences included interesting presentations. What stood out for me from the Australian conference was

the presentation on measurement studies conducted on exposure levels from electric smart meters. The exposure caused by these remote-read meters seemed to be little.

The workshop titled “EMF Health Risk Research: Lessons Learned and Recommendations for the Future”, held in Monte Verità, Switzerland, in October, focused on finding novel hypotheses for research (especially regarding interaction mechanisms) and also on reviewing current understanding of the possible mechanisms. The workshop had attracted experts from around the world. The programme included several good presentations by experts on the topic, and the last day included some group work sessions too.

What stayed with me from the Swiss workshop were the general issues related to childhood leukaemia. Children diagnosed with leukaemia are usually only a few years old. When thinking about their possible exposure to electromagnetic fields and the potential association with leukaemia cases, it would perhaps be useful to examine the exposure in babies. Another interesting perspective related to childhood leukaemia is that, according to research, it seems to be more common in children diagnosed with Down’s syndrome. This observation may lead to shedding new light on childhood leukaemia in general in the future. Some of the material presented is available on the workshop’s website.

I again found some fascinating new scientific articles for this bulletin. Starting with two articles on childhood leukaemia, the bulletin first reports on a study on potential associations between paternal occupational exposure and the child developing leukaemia, followed by an article on a study conducted in the Czech Republic examining the association between exposure to magnetic fields and childhood leukaemia. The third article includes evaluations of published exposure limits. The approach was perhaps slightly theoretical, but I think it is interesting that these kinds of issues are also studied scientifically. It is obviously good that the people setting the limits receive feedback on their work.

I also found several articles on electrohypersensitivity. Even though the topic has already been discussed quite extensively before, I think the articles provided some new perspectives too. The Japanese article, for example, reported that electrohypersensitive people often face financial and social challenges as a result of their symptoms. This is easy to understand, but as far as I remember, this perspective has hardly been studied before.

As usual, I finish the bulletin with an article on occupational exposure and the effects related to it. This time, it’s an Indian study on chromosomal alterations in electrical workers exposed to electromagnetic fields. In their conclusions, the researchers state that chronic occupational exposure to electromagnetic fields may lead to an increased risk of genetic damage amongst electrical workers. Hopefully the group will also publish results on other exposure factors in these working conditions so that it is possible to better assess their potential impact on the results. In any event, this was an interesting read amongst the articles discussing occupational issues.

Hope you enjoy reading this summary in English!

Leena Korpinen,
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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

Case-Control Study of Paternal Occupation and Childhood Leukaemia in Great Britain, 1962-2006

Editor-in-chief's comment: A group of researchers investigated possible associations between paternal occupational exposure and childhood leukaemia. The study employs quite an interesting approach to the topic. However, it may be challenging to find out the real paternal exposures afterwards.

Source:
Keegan TJ, Bunch KJ, Vincent TJ, King JC, O'Neill KA, Kendall GM, MacCarthy A, Fear NT, Murphy MFG. Case-control study of paternal occupation and childhood leukaemia in Great Britain, 1962-2006. British Journal of Cancer (2012) 107, 1652–1659.

No. 03

Association between Childhood Leukaemia and Exposure to Power-Frequency Magnetic Fields in Middle Europe

Editor-in-chief's comment: This time, the association between childhood leukaemia and exposure to magnetic fields was studied in the Czech Republic. Despite the higher exposure levels in Central and Eastern Europe, the researchers could not determine any indication of an association between ELF-MF exposure and childhood leukaemia.

Source:
Jirik V, Pekarek L, Janout V, Tomaskova H. Association between Childhood Leukaemia and Exposure to Power-Frequency Magnetic Fields in Middle Europe. Biomed Environ Sci, 2012; 25(5):597–601

No. 04

The Relationship between Anatomically Correct Electric and Magnetic Field Dosimetry and Published Electric and Magnetic Field Exposure Limits

Editor-in-chief's comment: The research group first presented the key results from earlier studies in which anatomically correct numeric models have been used to calculate the electric fields induced in the human body by external electric and magnetic fields. These results were then compared to the exposure limits. The group did not find it necessary to adjust the current limits but suggested taking tissue properties into account when using anatomical models to determine the exposure limits.

Source:

Kavet R, Dovan T, Reilly J.P. The relationship between anatomically correct electric and magnetic field dosimetry and published electric and magnetic field exposure limits. Radiation Protection Dosimetry (2012), pp. 1–17

No. 05

Gene Expression Profiles in White Blood Cells of Volunteers Exposed to a 50 Hz Electromagnetic Field

Editor-in-chief's comment: The research group reported on tests they used to study gene expression changes in white blood cells in men. Volunteers were subjected to either a real magnetic field of 62.0 µT or a sham exposure (ca. 0.21 µT). No difference between the volunteers subjected to real or sham exposure was found.

Source:

Kirschenlohr H, Ellis P, Hesketh R, Metcalfe J. Gene Expression Profiles in White Blood Cells of Volunteers Exposed to a 50 Hz Electromagnetic Field. Radiat. Res. 178, 138-149 (2012).

No. 06

Reported Functional Impairments of Electrohypersensitive Japanese: A Questionnaire Survey

Editor-in-chief's comment: The symptoms and physical functioning of Japanese people who reported themselves to be electrohypersensitive were studied through a questionnaire survey. The data was rather small, but it was particularly thought-provoking to hear that many of these people reported that they suffer from economical and social problems because of their symptoms. It seems there are also several different types of treatments in use.

Source:

Kato Y, Johansson O. Reported functional impairments of electrohypersensitive Japanese: A questionnaire survey. Pathophysiology 19 (2012) 95–100

No. 07

Idiopathic Environmental Intolerance Attributed to Electromagnetic Fields (IEI-EMF) and Electrosensibility (ES) - Are They Connected?

Editor-in-chief's comment: The research group approached electrohypersensitivity from a new perspective by carrying out an experiment on electrosensibility. The participants were individuals with self-reported electrohypersensitivity and the control persons. The researchers came to the conclusion that electrohypersensitive people may detect magnetic fields to some extent, but the symptoms attributed to the fields seemed to be mainly of psychogenic origin.

Source:

Köteles F, Szemerszky R, Gubanyi M, Körmendi J, Szekrenyesi C, Lloyd R, Molnar L, Drozdovszky O, Bardos G. Idiopathic environmental intolerance attributed to electromagnetic fields (IEI-EMF) and electrosensibility (ES) - Are they connected? Int. J. Hyg. Environ. Health (2012)

No. 08

Non-Specific Physical Symptoms and Electromagnetic Field Exposure in the General Population: Can We Get More Specific? A Systematic Review

Editor-in-chief's comment: Through a systematic literature review, the researchers tried to find more specific information on the physical symptoms associated with electromagnetic field exposure in the general population. They did not find evidence suggesting a direct association between the frequency and severity of non-specific physical symptoms and higher levels of electromagnetic field exposure. According to them, an association with perceived exposure seemed to exist, but evidence is still limited because of differences in conceptualisation and assessment methods.

Source:
Baliatsas C, Van Kamp I, Bolte J, Schipper M, Yzermans J, Lebret E. Non-specific physical symptoms and electromagnetic field exposure in the general population: Can we get more specific? A systematic review. Environment International 41 (2012) 15–28

No. 09

Evaluation of Chromosomal Alteration in Electrical Workers Occupationally Exposed to Low Frequency of Electro Magnetic Field (EMFs) in Coimbatore Population, India

Editor-in-chief's comment: The researchers detected chromosomal alterations in Indian electrical workers. Future research will hopefully provide more specific information on other occupational exposure factors in addition to the electromagnetic fields.

Source:
Balamuralikrishnan B, Balachandar V, Kumar S S, Stalin N, Varsha P, Devi S M, Arun M, Manikantan P, Venkatesan C, Sasikala K, Dharwadkar S N. Evaluation of Chromosomal Alteration in Electrical Workers Occupationally Exposed to Low Frequency of Electro Magnetic Field (EMFs) in Coimbatore Population, India. Asian Pacific J Cancer Prev, 13, 2961–2966

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