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Sp26-2

Biological effects induced by EMF exposure and conditions determining a particular risk for the exposed workers.

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Introduction: The recognition of electromagnetic fields (EMF) exposure related effects is fundamental for an appropriate prevention of the occupational risk.
Materials and Methods: Based on current scientific literature, an outline of the main health effects induced by EMF, and of the conditions determining a particular risk for the exposed workers, is provided.
Results: Occupational EMF exposure can induce both direct short-term and indirect effects. Considering long-term effects, the evidence of a causal relationship is currently evaluated as not adequate from the main authoritative institutions (e.g. IARC, FDA, ICNIRP, ARPANSA, etc). Direct effects are related to thermal mechanisms in case of high frequency EMF exposure and to the induction of currents in stimulable tissues in case of static magnetic fields, low frequency electric and magnetic fields exposure. The indirect effects of main relevance for the prevention of the occupational risk are the possible interference with the functioning of active medical devices. Interactions with the metal parts of implanted devices, including passive, and foreign bodies are also of interest. Workers with these conditions, and first of all subjects with pacemakers and ICD, should be regarded as "at particular risk". No other conditions, with the possible exception of pregnancy, have been currently considered.
Conclusions: Up to date, EMF effects recognized as relevant for the prevention of the occupational risk can be direct short-term and indirect effects. Workers with active medical devices are the main group of subjects to be considered at particular risk.

Sp26-3

The ARPANSA indications for the prevention of the occupational risk related to EMF exposure

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Introduction: The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is the Australian Government's primary authority on radiation protection for people and the environment including the protection of workers.
Methods: To protect workers from the harmful effects of radiofrequency (RF) electromagnetic fields (EMF), ARPANSA has published a national RF exposure standard, which was updated in February 2021. The ARPANSA RF Standard is aligned with international RF guidelines by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). For the protection of workers to low frequency (LF) EMF, ARPANSA recommends the ICNIRP LF guidelines. ARPANSA also supports research on occupational EMF exposure and health, and it assesses EMF exposure in different occupational settings.
Results: The ARPANSA RF Standard and the ICNIRP LF Guidelines can be applied by Work Health and Safety Regulations in different jurisdictions across Australia. Epidemiological studies conducted in Australia to date have not found consistent evidence of a causal association between occupational EMF exposure and long-term health effects such as cancer. A key concern across all previous studies is the quality of the EMF exposure assessment.
Conclusions: ARPANSA is currently supporting a measurement program in high EMF exposure occupations and further epidemiological studies investigating cancer with improved exposure assessment methods. ARPANSA also continues to collaborate with international authorities and experts on the issue of occupational EMF exposure and health and provides information and advice to Australian workers.

Sp26-4

The health surveillance of workers exposed to EMF: an outline of criteria

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Introduction: Electromagnetic fields (EMF) exposure is a recognized occupational risk, potentially involving a huge number of workers. The need of an effective Health Surveillance (HS) of such workers is unquestionable, and in some Countries is indeed mandatory, but specific health based criteria for HS of EMF exposed workers are hitherto scarcely defined.
Materials and Methods: In the European Union a specific Directive, the 2013/35/EU, provides exposure limits (ELV) for EMF occupational exposure, and lay down an obligation for the HS of exposed workers. Considering this Directive, an outline of the main criteria to be considered in the HS of EMF exposed workers in EU is discussed. These may be of interest to other Countries too.
Results: The EU Directive specifically addresses to the prevention of EMF adverse effects due to known direct biophysical effects, as stimulation of muscles, nerves or sensory organs or thermal effects, and to indirect effects as interference. Occupational EMF-exposures below the ELVs can be considered usually adequately protective against the direct effects, while for some indirect ones, e.g. interference in workers with active medical devices as pacemakers, a health risk cannot be neglected. No laboratory tests or medical investigations adequate for HS in terms of validity and performance are available.
Conclusions: The HS of occupational EMF exposed workers is mainly aimed to look up to the occurrence of any direct biophysical and indirect effects of EMF, and to screen the development of conditions possibly inducing an increased susceptibility ("workers at particular risk").

Special Session 27 Reproductive hazard in the workplace and environment

Chair: Hsiao-Yu Yang

Session introduction

Women during pregnancy exposed to a variety of chemical, physical and psychosocial factors at work have raised concerns about their potential effects on pregnancy outcomes and birth defects in offspring. The special issue aims to conduct updated extensive reviews on (1) the effects of specific occupations on the reproductive system; (2) effects of occupational, physical exposure on the reproductive system; (3) effects of occupational psychosocial