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Rapporteur without a study group: Ms LE NOUAIL MARLIÈRE

On 22 July 2011, the Council of the European Union and, on 13 September 2011, the European Parliament decided to consult the European Economic and Social Committee, under Article 304 of the Treaty on the Functioning of the European Union (TFEU), on the


The Section for Employment, Social Affairs and Citizenship, which was responsible for preparing the Committee’s work on the subject, adopted its opinion on 8 November 2011. The rapporteur without a study group was Ms LE NOUAIL MARLIÈRE.

At its 476th plenary session, held on 7 and 8 December 2011 (meeting of 7 December), the European Economic and Social Committee adopted the following opinion by 144 votes to 45, with 4 abstentions.

1. Conclusions and recommendations

1.1 The EESC recommends that this directive be adopted and implemented in the legislation of Member States as soon as possible.

1.2 However, the Committee is in favour of a precautionary approach being adopted without delay, given the risks of the non-thermal biological effects of emissions from electromagnetic fields. The long-term health of workers must be completely guaranteed at a high level through the introduction of the best available technologies at economically acceptable costs. The Committee expects a relevant provision to be incorporated into the directive.

1.3 The EESC supports the Commission’s initiative to fix thresholds so as to make this precautionary approach effective and credible; however, to ensure that this is absolutely effective it advocates fixed thresholds based on the thresholds applied when Directive 2004/40/EC was transposed (by Austria, the Czech Republic, Slovakia, Lithuania, Latvia, Estonia and Italy). The Committee stresses the need to strengthen the independence of scientific bodies involved in determining thresholds for workers’ exposure to electromagnetic radiation, its effects and its consequences for public health, and in establishing measures to protect the health of workers exposed to this radiation.

1.4 It is essential to put a stop to conflicts of interest among members of these bodies, linked to the financing of their research and their appointment (procedures and calls for tender, use of independent public research institutes).

1.5 The Committee concedes the need for a derogation for professions using magnetic resonance imaging (MRI) for medical purposes, which should however be subject to a time limit and accompanied by additional resources for research into new technologies to protect workers from the effects of electromagnetic fields and alternative techniques. Workers subject to the derogation should be covered by enhanced measures to protect them, special medical supervision and civil liability insurance to cover errors in the execution of their work arising from strong exposure to electromagnetic fields. The Committee also feels that the above-mentioned principles should be applied not only to medical workers, but also to all other workers who may be excluded from the general principles of the directive on the basis of the derogation included in Article 3 of the proposal.

2. Introduction

2.1 The aim of the proposed directive is to amend Directive 2004/40/EC of the European Parliament and of the Council of 29 April 2004 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields), which was originally to have been implemented in the legislation of Member States on 30 April 2008. The aim here is not the protection of the general public. In light of the specific questions posed by MRI and the need to continue the analysis of the directive’s impact, the European Commission has proposed and secured an extended deadline of up to 30 April 2012 for the implementation of the directive.
2.2 The proposal is a recast of the 2004 directive, with a new system of limit values and action values for the low frequencies, and seeks to protect workers from the direct and indirect effects of exposure to electromagnetic fields, but only the known short-term effects. In particular, it does not cover the risks that are being discussed of the non-thermal effects of exposure to certain low frequency fields.

2.3 In light of its specific medical use, a derogation is granted to medical sectors using MRI. In addition, derogations from some of the directive's protection standards are granted for the armed forces, and Member States are, in other cases, allowed to exceed these standards temporarily 'for specific situations'.

3. General comments

3.1 The EESC was not directly consulted on the 2004 directive but it was consulted in 2008 on the proposal to postpone the directive's implementation by four years. In that opinion (1), the EESC:

— reiterated its request of 1993 (2) 'to conduct research to identify the risks to workers' health caused by (...) exposure to (...) electromagnetic fields (including exposure over many years).

— maintained 'that the current levels of protection for workers against the risks of exposure to electromagnetic fields vary between individual Member States;' and that, 'the urgent preparation of an improved text for the directive, providing all workers with an appropriate level of safety (...) should be treated as a matter of priority.'

3.2 Scientific studies have revealed that electromagnetic fields have a certain number of adverse effects on health:

3.2.1 For magnetostatic fields: skin reactions, changes in the electrocardiogram (reversible up to an intensity of 2 Tesla (3)), complaints such as severe nausea, flashes in the eyes, vertigo, etc. observed even with a field intensity of 1.5T (4).

3.2.1.1 As regards low frequency fields (< 10 MHz): disruption of electrophysiological processes in the body which may lead to visual sensations (phosphenes), stimulation of the nervous and muscular tissue, cardiological dysfunctions, etc (5).

3.2.2 For high frequency fields (> à 100 kHz): hyperthermia, as a result of the absorption of energy by body tissues.

3.2.3 The risk of indirect effects, which also have a negative impact on the health and safety of workers, such as: explosion or fire following an electric arc, ferromagnetic projectiles, malfunction of electronic systems, the negative effect on workers considered to be at particular risk from the effect of electromagnetic fields, such as people with medical implants using electronic devices carried on the body, pregnant women, cancer patients, etc.

3.3 There is an ongoing fundamental debate on the physiological, non-thermal and medium-term effects of low frequency fields.

3.3.1 The suspected risks include: disorders of the neuroendocrine system (hormones, melatonin), neurodegenerative disorders (Parkinson's, Alzheimer's, sclerosis), effects on human and/or animal reproduction and development (risk of miscarriage, deformities) and increased risk of cancer (brain tumours, childhood leukaemia).

3.3.2 The IARC (International Agency for Research on Cancer, part of the WHO) has classified low-frequency electromagnetic fields and radiofrequency electromagnetic fields in category 2b (possibly carcinogenic to humans): once in 2001 on account of the possible risks of childhood leukaemia and again in 2011 following a study by Interphone (suspected increased risk of glioma, a type of brain cancer).

3.4 The recent Huss report (6) has drawn attention to the non-thermal biological effects, which are potentially harmful to plants, insects and animals as well as the human body; of exposure to electromagnetic fields, including at levels lower than the thresholds recommended by ICNIRP (7) and incorporated, by and large, in the European Commission's current proposal.

(3) Electromagnetic fields are measured in teslas, the symbol for which is T. The tesla is the international unit of magnetic induction and corresponds to 1 weber/m².
(7) International Commission on Non-Ionizing Radiation Protection.
3.5 This report, which is based on an overview of the numerous scientific findings and the hearings of all stakeholders (scientists, European Environment Agency, NGOs and citizens' associations, entrepreneurs, etc.), concludes that the EU should adopt a precautionary approach based on the ALARA principle (as low as reasonably achievable) as well as effective prevention measures. It should also review the current threshold values, without waiting for all the scientific and clinical evidence to concur, as waiting could lead to major health and economic costs, as was the case in the past with asbestos, PCB and tobacco.

3.6 Following this report, the Parliamentary Assembly of the Council of Europe adopted a resolution (8) which, 'as regards standards or threshold values for emissions of electromagnetic fields of all types and frequencies, (…) strongly recommends that the ALARA (as low as reasonably achievable) principle is applied. The resolution also indicates that, in connection with human health, 'the precautionary principle should be applied when scientific evaluation does not allow the risk to be determined with sufficient certainty'. The recommendation covers, 'both the so-called thermal effects and the athermic or biological effects of electromagnetic emissions or radiation'. It is essential to take action since, 'Given the context of growing exposure of the population (…) there could be extremely high human and economic costs if early warnings are neglected'. The resolution also stresses the need for scientific evaluation to be totally independent and credible in order to 'accomplish a transparent and balanced assessment of potential negative impacts on the environment and human health'. Finally, the resolution recommends reconsidering 'the scientific basis for the present standards on exposure to electromagnetic fields set by the International Commission on Non-Ionising Radiation Protection, which have serious limitations'.

3.7 In their recent responses to the current proposed directive, the social partners have highlighted the following in particular:

— The importance of not excluding any category of worker and the need to fill the European legislative vacuum concerning workers' exposure to electromagnetic fields;

— The absence of opposition to a derogation for workers using MRI, provided that there is a time limit (which is not the case in this directive), and that it is accompanied by specific medical follow-up measures;

— Their concern that workers should be protected against long-term risks (not taken into account in the proposed directive) with the creation of dialogue platforms between ICNIRP experts and national experts from the EU Member States.

3.8 Despite the possible effects on human health, there is still no European legislation to harmonise protection of workers exposed to electromagnetic fields in the EU.

3.9 The EESC reiterates the need for legislation to protect workers against the effects of exposure to electromagnetic fields. This is an area where scientific methodologies and findings have not yet produced a definitive concrete result, even if certain results of scientific studies confirm the negative effect of electromagnetic fields on workers. However, the extent and scale of the effect differ from one study to another.

4. Specific comments

4.1 The European Commission has chosen to base its proposal on a system of precautions which increase in line with the threshold values, rather than a more general precautionary approach based on the ALARA principle. As regards human health, all precautions should be taken to prevent workers from being exposed to the risks of the long-term effects. The evidence pointing to such possible effects, derived from numerous scientific studies, has simply been rejected by two scientific bodies, ICNIRP and SCENIHR (9). It should be stressed that this is due mainly to the small number of scientific studies on workers carried out in recent years, stemming from the fact that scientists have mainly focused on the issue of human exposure to the effects of mobile telephone systems.

4.2 Another argument commonly used by these organisations to rule out any long-term effect is that there is a lack of knowledge about the biological mechanisms through which exposure to electromagnetic fields could have an impact on living organisms. However, this is an argument which should favour use of the precautionary principle, if effects are observed regularly before the scientific community is able to come up with precise biological explanations.

4.3 Given this uncertainty the Committee supports 'a possible reduction in environmental exposure, made possible in particular by introducing the best available technologies at economically acceptable costs'.


(9) Scientific Committee on Emerging and Newly Identified Risks.
4.3.1 It is important for the level of exposure permitted by the requirements of the directive at the very least not to exceed the limits established by the work of the Member States’ recognised experts, based on scientific data and published in accordance with the principles of scientific publications.

4.4 It is useful at this point to refer to the opinion of the Agence française de sécurité sanitaire de l’environnement et du travail (French Agency for Environmental and Occupational Health Safety):

‘Considering in particular:

— The methodological gaps in the characterisation of exposure in experimental conditions observed in numerous studies;

— The possibility of long-term effects on particular diseases and the need to better document the effect of long-term (chronic) exposure;

— The importance of carrying out research into the possible biological effects of “non-thermal” exposure.’

In 2009 the agency proposed:

1) ‘ensuring the methodological quality of in vitro and in vivo studies concerning the physical aspect in particular (characterisation of exposure and type of signals), but also the biological aspect (blind experiments, appropriate controls, identification of false positives, repetition of experiments, sufficient statistical capability, etc.);

2) conducting reproduction and development studies on several generations of animals (for example, on animals predisposed to diseases for which the human susceptibility genes are known — neurodegenerative diseases, certain cancers, autoimmune diseases), to be compared with normal animals and under properly characterised and realistic exposure conditions;

3) reproducing certain studies analysed in this report which show biological effects which are probably of a physiological nature (especially on the blood supply to the brain);

4) developing studies on frequency bands lower than 400 MHz (especially for the chronic effects of low frequencies) and above 2.5 GHz. (10).

4.5 In connection with the precautionary principle, it is worth referring to the article published on 31 May 2001 by Olivier Godard, director of research at CNRS (national centre for scientific research), econometrics laboratory (UMR 7176), Ecole polytechnique, Principe de précaution: un bon principe en manque d’organisation de sa mise en œuvre (The precautionary principle: a good principle, lacking the means to implement it) (11).

Brussels, 7 December 2011.

The President of the European Economic and Social Committee

Staffan NILSSON