

## **Directive 2004/40/EC on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields)**

**NB The Physical Agents Directive (PAD) relates to workers only. It does NOT affect patients or volunteers.**

The Society and College of Radiographers (SCoR) has considered the implications of the above recent European Union (EU) directive which looks to protect those who work with electromagnetic fields. Although it has not been specifically aimed at Magnetic Resonance (MR) scanning departments it may well have implications for managers and staff and following discussion with the Medical Exposure Department at the Health Protection Agency, the SCoR have prepared the following statement:-

The Directive addresses the minimum health and safety requirements regarding the exposure of workers to risks arising from electro-magnetic fields (EMF's). The directive defines the risks as those due to short term effects in the human body caused by induced currents, energy absorption and contact currents; it does not address possible long term effects.

The PAD is a very general document and it is difficult to determine how it is going to effect MR in the UK because it is:-

- a) Written from the perspective of protection of industrial workers, not specifically MRI.
- b) Each member state can implement the directive in its own way, and therefore, there is likely to be considerable variation across the different EU countries.

The body implementing the PAD, and responsible for its implementation in the UK will be the Health and Safety Executive (HSE), and they will take into consideration advice by the International Commission on non ionising Radiation (ICNIRP)

The PAD sets out two values in the range of 0 – 300 GHz, the exposure limit values and the action values.

Action values are not exposure limit values, and may be exceeded. However doing so triggers a requirement to undertake one or more specified measurements set out in the directive. The ICNIRP is

currently reviewing its own guidance on limiting exposure to both static and low frequency magnetic fields. This is due for completion in 2006, and will impact on the HSE interpretation of the EU PAD, due for implementation in 2008.

However, an exposure level for current density of 40 mA/m<sub>rms</sub> (RMS) as expressed in the PAD has implications for interventional MR, and for procedures that require standing at the end of the bore when gradients are operating. (1) It should be remembered that there are many variables in MR scanning and advice would need to be sought from individual manufacturers.

With regard to the static fields, the 2T static field limit will be/has been removed from the EU PAD. It is noted that the ICNIRP may be inclined to include a 2T limit. The HSE has opined that it intends to use a “light touch” in the implementation of the directive, this remains to be seen and indications are to the contrary. The HSE has traditionally taken a firm line regarding safety of workers.

The implications for the EU PAD for radiographers and others working in MR units are not yet clear. Further advice will be issued in due course.

(1) *Magnetic Resonance department at Nottingham University*  
([www.magres.nottingham.ac.uk](http://www.magres.nottingham.ac.uk))

*The EU PAD can be accessed via [www.srp-uk.org/emf/office.pdf](http://www.srp-uk.org/emf/office.pdf)*

*S<sub>Co</sub>R acknowledges the help received from Professor Tom Redpath, Department of Radiology, Aberdeen University and the Medical Exposure Department at the Health Protection Agency in the preparation of this guidance.*

Responsible Officer Kate Garas  
e-mail [kateg@sor.org](mailto:kateg@sor.org)  
November 2005