

The Control of **Electromagnetic Fields at Work** Regulations 2016

Health & Safety Briefing No. 69

February 2018



Overview

All workplaces will contain equipment which emit electric and magnetic fields (EMFs); predominantly either power-frequency, 50 Hz, or radio frequency (radio, TV, wifi and microwaves). The Control of Electromagnetic Fields at Work Regulations 2016 set exposure limits on these EMFs to ensure the safety of employees. These regulations protect against acute effects (interference with nerves or heating) from relatively high exposures. Very few workplaces will contain one of the types of specialised equipment that is capable of exceeding the limits, so the majority of employers will not need to change anything in their workplace. The regulations, however, do impose a duty to perform an exposure assessment.

The regulations

The exposure limits enforced by the regulations are fairly complex. They contain the actual Exposure Limit Values, but also Action Levels (separate for direct and indirect effects), which are easier to use in practice. The limits vary with frequency and are quite different for power frequencies and radio frequencies. And, at power frequencies, there are different limits for sensory effects and for health effects.

There is some complexity surrounding the limits for sensory and health effects but in most cases you should be able to demonstrate compliance simply by the type of equipment present.

Exposures to EMFs

In rough terms, there are three categories of equipment:

1. Equipment complying with the occupational exposure limits. This will cover most work environments and no action is necessary.
 - Phones
 - Wireless communications devices and networks
 - All normal office equipment including computing and IT
 - Non-inductive battery chargers
 - Normal office wiring and lighting
 - Handheld electric tools, electric heating, domestic and professional appliances
 - Coating and painting equipment
 - Overhead lines crossing the workplace (except outdoors under the highest-voltage lines)
 - Base Stations outside the designated exclusion zone
2. Equipment that may exceed some of the exposure limits, but where HSE have issued an exemption. You will need to be confident that your staff are not coming to harm, and you need to reduce exposures where reasonably practicable, but you do not need to take action to meet the exposure limits. Military activities are also exempted.
 - Electrolysis equipment
 - Dielectric heating
 - Induction heating
 - Manually operated resistance welding equipment
 - Magnetic Resonance Imaging
3. Equipment that may exceed the exposure limits. You will need to assess exposures (usually from published information and manufacturers' data, with measurements only as a last resort) and may then need an action plan to reduce the exposures.
 - Radio and TV broadcasting equipment
 - Base stations within the exclusion zone
 - Certain rare electricity supply arrangements
 - Spot and seam welding
 - Arc furnaces
 - Magnetisers and demagnetisers
 - Microwave heating and drying
 - RF plasma devices

Note that the lists here are simplified versions of longer lists produced by HSE in their Guide to the Regulations (HSG281) and you should check that for finer details.

Staff at particular risk

Active Medical Devices (pacemakers, defibrillators, neuro-stimulators, insulin pumps etc.) are generally required to be immune to interference only up to the public exposure limits, which are lower than the occupational limits. Office environments usually comply with the public limits so do not cause problems. But you need to assess the safety of other workplaces for any staff with

these devices (including to static magnetic fields from magnets), though problems are rare in practice. Passive medical devices (rods, pins, plates, orthopaedic implants) can similarly be susceptible to heating, mainly at radio frequencies.

There is only limited evidence that pregnant women are at any greater risk from EMFs, but they are classed in the regulations as staff at particular risk, and it makes sense to treat them similarly to staff with medical devices.

Record keeping

All employers need to conduct an Exposure Assessment, though in most cases, this should be a desktop exercise on the basis of the equipment present and no measurements are needed. Only in the minority of workplaces where equipment can produce high fields might a Risk Assessment and an Action Plan also be needed.

According to the regulations, if you employ five or more employees you should keep a record of these assessments.

Finding out more

Most employers will find that they are already compliant with the exposure limits and can compile the Exposure Assessment they need from published sources:

- The Control of Electromagnetic Fields At Work Regulations 2016, and the HSE's Guide to them (HSG281)
<http://www.hse.gov.uk/radiation/nonionising/emf.htm>
- The more detailed EU "Non-binding Guide to good practice for implementing Directive 2013/35/EU: Electromagnetic fields"
<http://www.ec.europa.eu/social>
- The IET's Factfile on EMFs, covering public exposures and health concerns
<https://www.theiet.org/factfiles/bioeffects/emf-factfile-page.cfm>

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