

Independent Guide

Electric and magnetic fields in the workplace - what do I need to know?



Independent workplace compliance

What are Electric Magnetic Fields (EMFs)?

Over recent decades the general public has become increasingly aware of the potential adverse health effects of exposure to electric and magnetic fields at extremely low frequencies (ELF). Electromagnetic fields consist of electric (E) and magnetic (H) waves travelling together at the speed of light. ELF fields are those defined as having frequencies of up to 300Hz.

Electric fields arise from electrical charges. Any device connected to an electrical outlet, even if the device is not switched on, will have an associated electric field which is proportional to the voltage of the source to which it is connected. Electric fields are strongest close to the device and diminish with distance. Common materials, such as wood and metal, shield against them. Magnetic fields arise from the motion of electric charges i.e. a current. When the device is switched on and a current is flowing, any device connected to an electrical outlet will have an associated magnetic field which is proportional to the current drawn from the source to which it is connected. Magnetic fields are strongest close to the device and diminish with distance. They are not shielded by the most common materials and easily pass through them.

Where are EMFs found in the workplace?

EMFs are generated by electrical equipment in the workplace, such as Visual Display Units, copiers/printers and mobile phones. However, the level of EMFs which office workers are exposed to is very small and has not been found to adversely affect human health.

EMF interference

Sometimes, office workers may see image movement on the screen of their computer terminal. This can be caused by ELF magnetic fields interfering with the electrons which produce the image on the screen. These magnetic fields are found near cables which provide electrical power, or around transformers associated with power supplies to buildings. The fields from these sources are generally well below the levels which cause any health concerns. A simple solution to this problem is to relocate the computer to another part of the room. People also associate EMFs with the micro shocks they receive from equipment in the workplace. Although it is possible for static fields to contribute to this phenomenon, they may also be caused as a result of low humidity in the workplace. This can be a particular problem in buildings without humidification control during the dry winter months.

Is there any guidance or legislation concerning EMFs?

A number of governmental and professional bodies have developed exposure standards for EMFs. In 1998 the ICNIRP issued exposure guidelines for electric and magnetic fields, residential and occupational exposure. For magnetic fields, the guidelines recommended are 500 μ T (microtesla) for occupational areas and 100 μ T for residential areas. For electric fields, the guidelines recommended are 10 kV/m (kilovolts per metre) for occupational and 5 kV/m for residential. ELF electric fields emitted from a VDU range typically from less than 1 V/m up to 10 V/m at operator positions. Magnetic flux densities range from 100 - 700 nT, (1000 nT {nanotesla} = 1 μ T {microtesla}). Electric fields at operator positions are likely to be in the range of 5 - 10 kV/m.

On 31st March 2004 the National Radiological Protection Board (NRPB) advised the UK to adopt the ICNIRP exposure guidelines. In April 2004 the EU adopted a directive on occupational exposure to EMFs which gives force to the ICNIRP exposure level. The UK was to implement this by 2008, but has postponed its implementation until Oct 2013 while it is revised as the original requirements were disproportionate and overly burdensome.

What are the health effects of EMFs?

EMFs have been linked to causing everything from headaches and skin rashes to cancer and adverse pregnancy outcomes. As technology proliferates in our professional and personal lives, the issue of whether EMFs cause these complaints or diseases has caused much debate. The World Health Organisation takes these concerns very seriously and, in 1996, they established the International EMF Project to resolve the health issues raised by EMFs.

Studies in Scandinavia have strengthened the evidence for believing that some groups of workers, in industries where exposure to EMFs may have been elevated, have an increased risk of leukaemia, but not of brain cancers. However, no increase in the risk of leukaemia has been seen in workers exposed to high levels of EMFs. The conclusion remains that it is impossible to decide whether the hazard (if it exists) is due to exposure to EMFs or to some chemical associated with the work.



ISO 9001:FS 24510
ISO 14001:EMS 84550
BS OHSAS 18001: OHS 590676

Assurity Consulting Limited

26 Redkilt Way Horsham West Sussex RH13 5QH
t +44 (0)1403 269375 e info@assurityconsulting.co.uk
w assurityconsulting.co.uk

Registered in England and Wales Reg. No. 2227268
Corporate Member of IWFWM

Independent Guide

Electric and magnetic fields in the workplace - what do I need to know?



Independent workplace compliance

The guidance which the Health and Safety Executive produce to accompany the Health and Safety (Display Screen Equipment) Regulations 1992 states: "The levels of electric and magnetic fields are similar to those from common domestic electrical devices. Although much research has been carried out on possible health effects from exposure to electromagnetic radiation, no adverse health effects have been shown to result from the emissions from display screen equipment."

Can anything be done to minimise the levels of EMFs in the workplace?

There are numerous devices available, such as shields, which claim to reduce the levels of EMFs surrounding office equipment. However, the quantities emitted by VDUs are very low and are well within the occupational exposure standard. Therefore, it is unlikely that you would get any real benefit from investing in such devices.

This guide is of a general nature; specific advice can be obtained from Assurity Consulting. Assurity Consulting is the UK's leading independent compliance consultancy specialising in workplace health, safety and environmental solutions. We have over 30 years' experience of helping customers of all sizes, from across all sectors, manage their compliance responsibilities, making sure that their organisation is compliant, their employees are safe, their processes are cost effective and their management team is in control.



ISO 9001:FS 24510
ISO 14001:EMS 84550
BS OHSAS 18001: OHS 590676

Assurity Consulting Limited

26 Redkirk Way Horsham West Sussex RH13 5QH
t +44 (0)1403 269375 e info@assurityconsulting.co.uk
w assurityconsulting.co.uk

Registered in England and Wales Reg. No. 2227268
Corporate Member of IWFPM