

factsheet

Electric and Magnetic Fields (EMFs)

What causes EMFs?

Electric and Magnetic Fields (EMFs) are produced wherever electricity is used, and there have been suggestions that exposure to these fields might be a cause of ill health. National Grid fully recognises people's concerns and the uncertain scientific position on this subject, and this factsheet explains the steps we take to make sure that the public are properly protected.

The UK electricity system produces EMFs at the power frequency of 50 Hz. Mobile phones and other broadcast and telecommunications equipment operate at much higher frequencies (many million Hz) and have very different characteristics.

Electric fields depend on the operating voltage of the equipment. The operating voltage of transmission equipment is generally constant and so the electric field produced is also nearly constant.



EMF levels fall rapidly with distance, typically returning to the normal background range at a distance of around 150 metres.



Magnetic fields depend on the electrical currents flowing, which vary according to the electrical power requirement at any given time. Both fields diminish rapidly with distance from their source. Electric fields are shielded by most common building materials, trees and fences, but magnetic fields are not. Most of the scientific concern is about magnetic, not electric, fields.



As there is uncertainty about whether or not EMFs are linked to health effects, National Grid considers it is vital that the public are properly protected.

The background EMFs that are present in all houses come from the house wiring, electrical appliances, and the low voltage distribution cables that carry electricity along streets. In a house near a National Grid high voltage overhead power line the fields are usually higher than in houses that are not near an overhead line. Fields levels depend on the details of the particular overhead line. They are highest directly underneath an overhead line; they fall rapidly with distance, typically returning to the normal background range at a distance of around 150 metres.

Do EMFs affect health?

Though the balance of evidence is against there being any effect on human health from exposure to EMFs there is some scientific evidence suggesting a possible link between unusually high exposures to magnetic fields and childhood leukaemia. Based on this evidence, magnetic fields are classed by the World Health Organization (WHO) as 'possibly' carcinogenic.

As there is uncertainty about whether or not EMFs are linked to health effects, National Grid considers it is vital that the public are properly protected. In the UK the Health Protection Agency recommends international guidelines for limiting exposure to EMFs, which are then adopted by the UK Government. National Grid considers that following the advice of the authoritative and independent experts in this way is the right way of ensuring public safety and we are committed to designing electricity transmission equipment to comply with these guidelines.

In fact, all power lines comply with two related sets of policies. Firstly, they comply with these exposure limits. Secondly, following a major stakeholder exercise called SAGE – Stakeholder Advisory Group on ELF (extremely low frequency) EMFs – the UK has a policy of taking precautionary measures to reduce EMFs where these are of low cost. When applied to overhead lines this means it is appropriate to route them away from homes where possible, and to include a design feature called “optimal phasing” which reduces the EMFs, but not to require a minimum separation between overhead lines and homes.

National Grid takes this issue extremely seriously and is committed to open and honest communication with interested stakeholder groups and the public. This factsheet presents basic information on EMFs and how National Grid's transmission network is designed and operated to ensure public safety. There is much more information available if you are interested.

For the most detailed information, visit:
www.emfs.info

We also have a printed booklet available:
'EMFs The Facts'

You can also contact the EMF helpline on:
0845 702 3270

Alternatively, email:
emfhelpline@nationalgrid.com