EMF Hypersensitivity: How Can Architects Help You?

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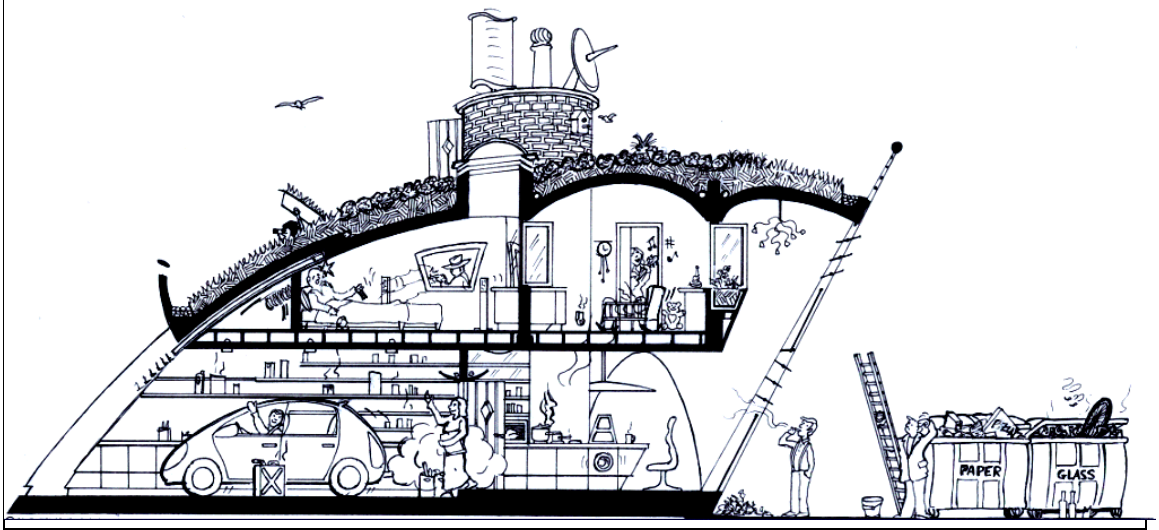
"There's more to environmentally-friendly healthy housing than green roofs and bottle banks!"



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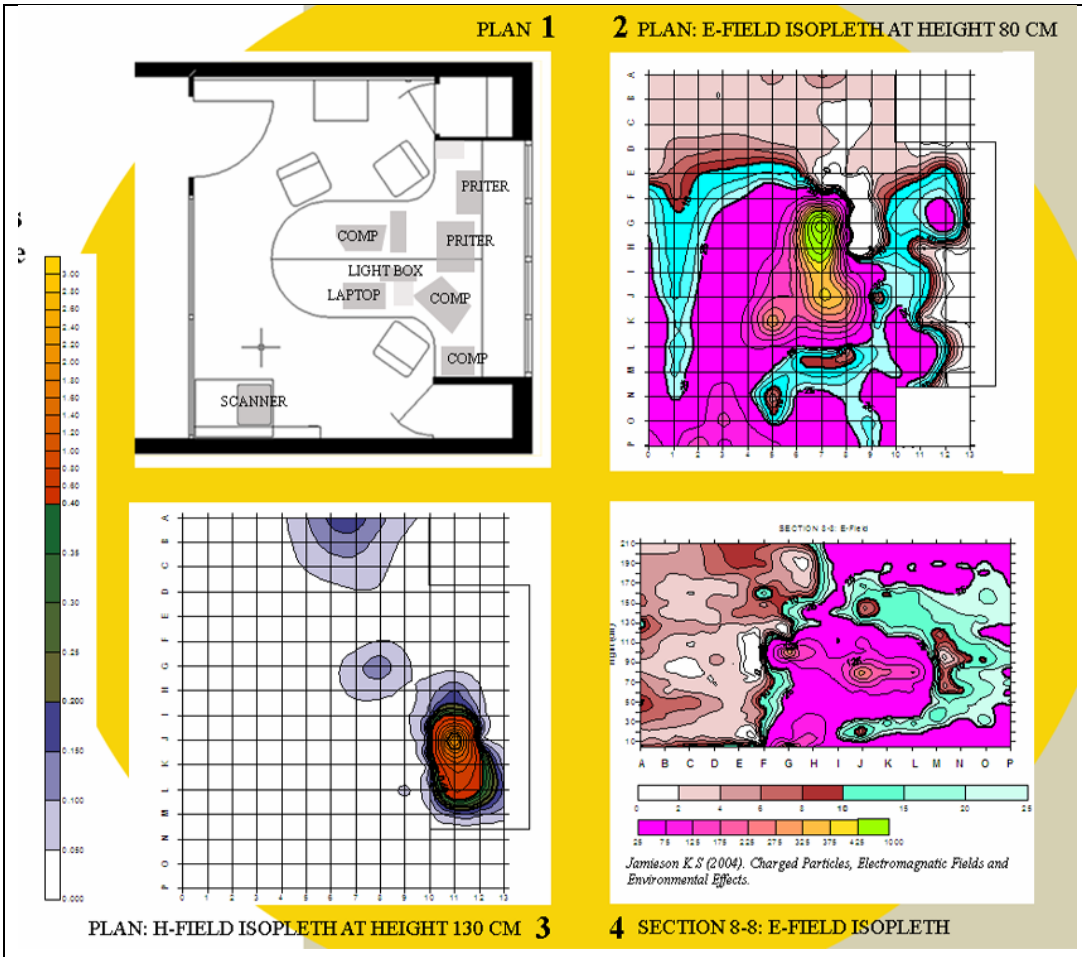
Buildings should be designed to take the HEALTH effects of both natural and artificial electromagnetic fields into consideration.

The concentrations and types of Electromagnetic Fields (EMFs) present in buildings are significantly influenced by type of electrical equipment used, construction techniques and materials specified, building location and zoning strategies.

People spend the majority of their time inside buildings, especially in work and sleep microenvironments. The electrical nature of the indoor environment has been dramatically transformed over a relatively short period of time, with little thought being given to the possible effects of such changes on the health of the occupants. The building design and functions often have to be adjusted to be sympathetic to the end user.

Results of EMF measurements presented here show an example of field variations present in an office room. The variations in the strengths of the localised fields in individual microenvironments are clearly demonstrated for both electric and magnetic fields (Figures 1-4).



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A.C. electric fields

- Laptop computer emitted fields of over 400 V/m before being earthed, after which fields of under 20 V/m were noted.
- The extension cable located by the feet of the users of the workstation on line 8-G on the section through the room registered a field of over 400 V/m at a distance of 5cm from the socket outlets for the plugs it was powering.
- It is suggested that such high fields will detrimentally affect current flow in the body. Further investigations are recommended.

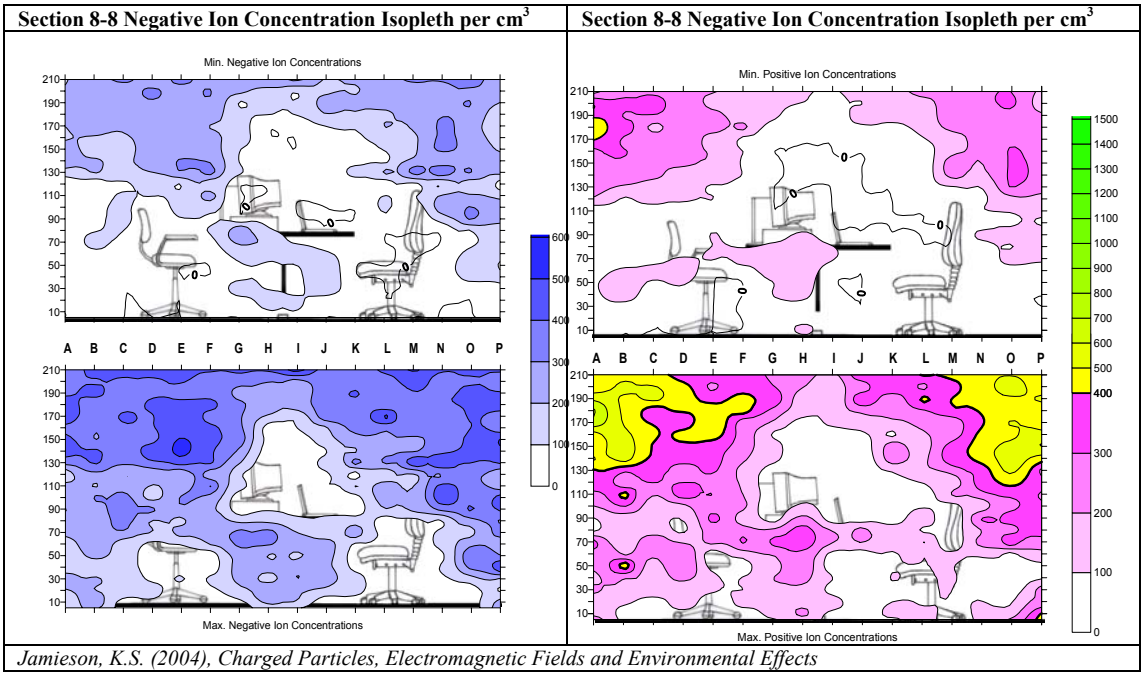
A.C. magnetic fields

- High fields of 2.3 - 13 µT were detected immediately over the desktop computer. This unit has since been removed.
- A field of 0.17 µT was detected at A-7 / A-8 though there was no electrical equipment in that part of the room. This field originated from plug-in transformers in the switched socket outlets on the other side of the wall in an adjacent office.

Additional EM Factors to be taken into consideration:

Air Ion Concentrations

Air ions, particularly negatively charged oxygen ions are vital for life. These are often found in very low concentrations indoors due to the presence of electrical equipment and synthetic materials. Russia has mandatory regulations with regards the minimum and maximum allowable ion concentrations encountered whilst staying daily in an enclosed space. The ion concentrations found in many work and home environments are often below the minimum levels recommended.



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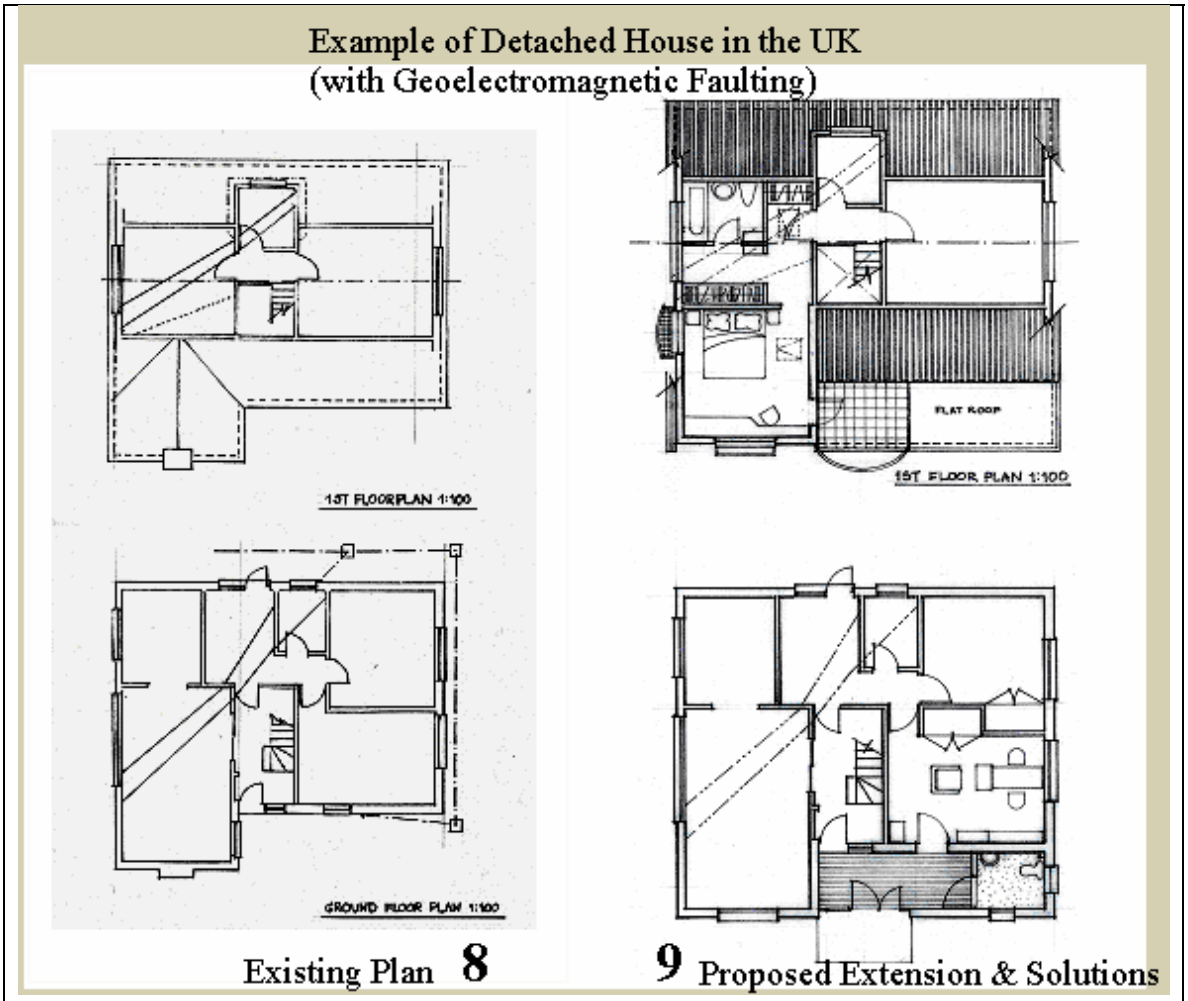
- The positive and negative ions concentrations measured in the vertical cross-section taken through the work area were well below the minimum mandatory concentrations specified in Russia's regulations for computer workplaces (SanPiN 2003).
- It is suggested that concentrations of negatively charged oxygen, which are vital for health (Goldstein and Arshavskaya, 1997), will be particularly low in the areas exhibiting low ion concentrations. These low concentrations are particularly prevalent around the areas generally occupied by the occupants of this room due to the presence of electrical equipment which emits high fields and the presence of synthetic materials and finishes.
- Low concentrations of negatively charged ions can put undue stress on the body and lead to the development of hypoxia and degenerative illnesses.

Geoelectromagnetic Stress

The ability of geological faults and underground streams to cause illness in people who spend prolonged periods over them has been scientifically documented in France (Cody 1937), Germany (Bergsmann et al., 1989) and Russia [(Gritsenko (1998) and Fedotov and Fedotova (1998)) – cited by (Dubrov 2001)].

Such areas are normally highly localized and can often with proper thought be incorporated into architectural schemes and layouts in a responsible manner.

This is often achieved by using such areas for the storage of non-perishable goods, or for general circulation space where people do not spend a great deal of time. However, further research is required.



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Conclusions

Electromagnetic pollution inside the building envelope can be reduced or prevented by careful design and specification. This can be undertaken in both new and renovated buildings, though it is often easier and more cost effective to do so with new-build schemes.

Architects and other design professionals need to be informed of their collective responsibilities on this issue. Both public education and interdisciplinary research into EMF hypersensitivity should be encouraged.

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