

*This abstract is for a presentation made an international conference entitled “The Precautionary EMF Approach: Rationale, Legislation and Implementation”, convened by the International Commission for Electromagnetic Safety and hosted by the City of Benevento, Italy, in February 2006,*

**The Effects of Gradients of Electric and Magnetic Fields on Biological Systems**  
**Frank S. Barnes**

In this talk the effects of gradients of electric and magnetic fields will be reviewed. The induced currents from these fields will be compared with the diffusion currents and estimates will be made on the conditions under which these fields are likely to lead to biologically observable changes. It is of interest to note that these fields can lead to a net transport of molecules and ions at radio frequencies and that the boundary conditions and concentration distributions will determine when these currents are significant.