A COMPARISON OF IMPORTANT INTERNATIONAL AND NATIONAL STANDARDS FOR LIMITING EXPOSURE TO EMF INCLUDING THE SCIENTIFIC RATIONALE.

General Aspects

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Abstract:
A comparison of Eastern (from Russia, Hungary, Bulgaria, Poland, and the Czech Republic) and Western (represented by the International Commission on Non-Ionizing Radiation Protection guidelines and the Institute of Electrical and Electronic Engineers standards) radiofrequency standards reveals key differences. The Eastern approach is to protect against non-thermal effects caused by chronic exposure to low level exposure, and the occupational basic restriction is power load (the product of intensity and exposure duration). In contrast, the Western approach is to protect against established acute biological effects that could signal an adverse health effect, and the principal basic restriction is the specific absorption rate to protect against thermal effects. All of the standards are science-based, but a fundamental difference arises from a lack of agreement on the composition of the reference scientific database and of which adverse effect needs to be protected against. However, differences also exist between the ICNIRP and IEEE standards. An additional complication arises when standards are derived or modified using a precautionary approach. For ELF the differences between ICNIRP and IEEE are more fundamental; namely, differences in the basic restriction used (induced current; in-situ electric field) and the location of breakpoints in the strength-frequency curves result in large differences. In 2006, ICNIRP will initiate the review of their ELF and radiofrequency guidelines, and this will provide an opportunity to address differences in standards and the move towards harmonization of EMF standards and guidelines.