Available online at www.sciencedirect.com
SCIENCE DIRECT®
Bioelectrochemistry 59 (2003) 139
Bioelectrochemistry
www.elsevier.com/locate/bioelechem

# Book review

**Biological and Health Effects from Exposure to Power-Line Frequency Electromagnetic Fields**
H. Takebe, T. Shiga, M. Kato, E. Masada, IOS Press, Amsterdam, 2001, ISBN: 1-58-603105-8, XV+368 pages, € 113.45

Parallel to the EMF-Rapid program in the USA, a similar research project was performed in 1999 by Japanese laboratories (e.g., Tokyo Electric Power). This book is the English translation of the corresponding report which also includes medical results. The text is divided into two parts.

The introductory Part I deals with health effects in living beings especially by power line frequency electric and magnetic fields, addressing the main question "is there any effect?" Starting with epidemiological studies of Wertheimer and Savitz in the USA the different situation in Japan is characterized in Chapter 1. Chapter 2 describes the medical effects of stronger static and pulsed electromagnetic fields (EMF). Research on nervous and endocrine systems, environmental appliances (installations), and effects on gene activities in mammalian cells are discussed in Chapters 3–5, respectively.

Part II is devoted to various aspects of in vivo and in vitro experiments, such as electric or magnetic fields from several sources in daily life (Chapter 1), carcinogenicity tests in rats and in offsprings of mice, particularly leukemia promotion (Chapter 2), EMF exposure of 40 generations of fruit flies, induction of chromosome aberration in human leukocytes, effects on $Ca^{2+}$ fluxes, as well as effects on proliferation of human cancer cell lines (Chapter 3), and experimental facilities (Chapter 4).

Whereas the book *Magnetbiology—underlying physical problems* by V. Binhi (Academic Press, San Diego, 2002) is focused on basic problems and theories, this book describes environmental conditions as well as sophisticated equipment and experiments in detail. This includes many reports on negative results. For example, exposition to 0.5 and 5 mT fields (i) has no promoting effect on carcinogenicity during 2 years (Chapter 2.2), (ii) does not cause significant differences in spontaneous abortion, body weight, incidence of leukemia and brain tumor, as well as survival curves (Chapter 2.3), (iii) does not change the mutation rate and viability distribution of the fruit fly (Chapter 2.3), and (iv) does not yield chromosome aberrations (Chapter 3.4). A field of 65 μT at 50 Hz does not affect $Ca^{2+}$ influx into cells (Chapter 3.5), and proliferation of HL-60, K-562, or MCF 7 cells is not changed by exposures to 0.02-, 0.1-, and 0.5-mT fields during 3 days (Chapter 3.6), in contrast to the addition of fetal bovine serum! Since these findings pertaining to the environmental field range are clearly at variance with results previously reported in the literature it is of great importance that these experiments will be repeated.

Hermann Berg
*Greifbergstrasse 15, Jena D-07749, Germany*
*E-mail address:* hbergjena@hotmail.com
Tel./fax: +49-3641-448-250

doi:10.1016/S1567-5394(03)00015-X