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**Research Article**

## Residential magnetic fields as a risk factor for childhood acute leukaemia: Results from a German population-based case-control study

Joachim Schüz<sup>1\*</sup>, Jan-Peter Grigat<sup>2</sup>, Karl Brinkmann<sup>2</sup>, Jörg Michaelis<sup>1</sup><sup>1</sup>Institute for Medical Statistics and Documentation, University of Mainz, Mainz, Germany<sup>2</sup>Forschungsverbund: EMV biologischer Systeme (Electromagnetic Compatibility of Biological Systems), Technical University of Braunschweig, Braunschweig, Germany**email:** Joachim Schüz ([schuez@imsd.uni-mainz.de](mailto:schuez@imsd.uni-mainz.de))

\*Correspondence to Joachim Schüz, Institut für Medizinische Statistik und Dokumentation, Universität Mainz, D-55101 Mainz, Germany

Fax: +49 6131 172968

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**Abstract**

Our objective was to investigate whether exposure to residential power-frequency (50 Hz) magnetic fields above 0.2 microTesla increases a child's risk of leukaemia and to confirm or reject a finding from a previous German study on this topic, which reported increased leukaemia risk with exposure to stronger magnetic fields during the night. A population-based case-control study was used, covering the whole of the former West Germany. Residential magnetic fields were measured over 24 hr for 514 children with acute leukaemia identified by the German Childhood Cancer Registry and 1,301 control children taken from population registration files. Magnetic fields above 0.2 microTesla were relatively rare in Germany (only 1.5% of the study population). Childhood leukaemia and 24 hr median magnetic fields were only weakly related (OR = 1.55, 95% CI 0.65-3.67). A significant association was seen between childhood leukaemia and magnetic field exposure during the night (OR = 3.21, 95% CI 1.33-7.80). A dose-response-relationship was observed after combining the data of all German

studies on magnetic fields and childhood leukaemia. The evidence for an association between childhood leukaemia and magnetic field exposure in our study comes from a measure of exposure during the night. Despite the large size of our study, the results are based on small numbers of exposed children. If the observed association stands, the effect on a population level in Germany would be small. © 2001 Wiley-Liss, Inc.

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