



Non-Ionizing Radiation & Children's Health

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PLATFORM PRESENTATION ☒

Childhood Leukemia - Risk Factors And The Need For An Interdisciplinary Research Agenda

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A small expert group met in conclave in July 2010 to define a long-term strategic research agenda toward a better understanding of the causes of childhood leukemia (1). The motivation and invitation for this project came from the German Office for Radiation Protection (BfS) because radiation experts have been puzzled for some time by epidemiological findings of an increased incidence of childhood leukemia near German nuclear facilities (2) as well as by a statistic association with exposure to residential low-frequency magnetic fields (3). Both findings are difficult to explain given the current knowledge of the biological mechanisms of ionizing or non-ionizing radiation, as both types of exposure deposit far too little energy in cellular DNA and other likely targets to be considered directly causative. A previous workshop on risk factors held in May 2008 (4) and a follow-up meeting led to the conclusion that understanding of the causes of childhood leukemia development requires a broadened, interdisciplinary approach.

The discussion and work on a research agenda was focused on the main leukemia type in childhood, acute lymphoblastic leukemia (ALL), and especially B-cell precursor ALL. Based on the views of experts from different disciplines (epidemiology, clinic, experimental modeling, theoretical modeling, molecular biology, and genetics), key features and related key questions of childhood ALL have been developed. The resulting research recommendations covering the most important research areas in the near future will be presented at the workshop.

References:

- (1) Ziegelberger G, Baum C, Borkhardt A, Cobaleda C, Dasenbrock C et al. Research recommendations toward a better understanding of the causes of childhood leukemia. *Blood Cancer Journal* (2011) 1, e1; doi:10.1038/bcj.2010.1. Published online 28 January 2011
- (2) Kaatsch P, Spix C, Schulze-Rath R, Schmiedel S, Blettner M. Leukaemia in young children living in the vicinity of German nuclear power plants. *Int J Cancer* 2008; 122: 721-6.
- (3) Schuez J, Ahlbom A. Exposure to electromagnetic fields and the risk of childhood leukemia: a review. *Rad Prot Dos* 2008; 132: 202-211.
- (4) Risk factors for childhood leukemia. Proceedings of an ICNIRP Workshop, Berlin, May 5-7, 2008. Matthes R, Ziegelberger G (eds.) *Rad Prot Dos* 2008; Special Issue 132(2).