



# Non-Ionizing Radiation & Children's Health

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POSTER

PLATFORM PRESENTATION

## A database for electromagnetic fields exposure assessment

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This paper presents ongoing research aimed at characterising human exposure to electric and magnetic fields, which can be a resource to epidemiological research projects.

Epidemiological research usually faces a major difficulty in assessing past exposure of the subjects participating in the study. Usually rough estimates of field exposure such as distance to major transmission lines or a classification of the residence in classes are used. When a more detailed evaluation of exposure is possible it generally shows that those rough exposure numbers are quite different from real values, introducing a very large source of error in the epidemiological study. The research presented here consists in using computer programs, with electromagnetic fields calculation models, combined with extensive measurements, in order to build a data base with electric and magnetic fields from: transmission lines, substations, power stations, offices, shopping centres, hospitals, schools, subway stations, residences. In particular a large set of domestic appliances have been measured, such as: washing machines, tumble dryers, electric knives, liquidizers, hair dryers, dish washers, decoders and so on.

Computational models were used in situations where they have already been widely validated, such as transmission lines, substations, large equipments (power transformers, circuit breakers), combined with spot measurements. In urban situations measurements have been performed, following a protocol which separates usage conditions such as passing near and using a given apparatus. Another important point is to separate electrical appliances according to their fabrication period, since technology undergoes large changes which reflect in the electromagnetic fields produced. When this database is complete an exposure assessment of different individuals can be produced from questionnaires filled by volunteers concerning residence, work, main habits, etc. using computer routines working on the database.

Basic statistics of fields produced by different installations and electric appliances will be shown and also, to illustrate the potential of this approach some examples will be presented comparing the field exposure obtained using this methodology with the indicators generally used in several published research projects.