

Cuba

Report on EMF Activities

10th International Advisory Committee on EMF

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The National Institute of Hygiene, Epidemiology and Microbiology and the National Network of Healthy Housing of Cuba, have assessed the link between infantile leukemia and housing exposure to electro-magnetic fields in the city of Havana from year 1995 to 2000 in order to establish a health surveillance system for electro-magnetic fields in the future and limit values for exposure at a national level and the monitoring operationalization and calculation of sanitary protection areas. The universe was made up by the total of children diagnosed with the disease in Havana. The ecological component of the study made it possible to explore the relationship between existing infection rates and electrification indicators in the territory. The case-control component was developed to precise attributable causes and to control confusion factors. An equal number of individuals was randomly selected and matched 1:1 same age, school and sex as control group. Data were obtained from the National Registry of Cancer of the Oncology and Radiotherapy Institute. Bias factors were represented by the resident mobility degree, and memory and current factors. Research outcomes are presented below:

The EMF act as risk factors for infantile leukemia:

- In the light of the regression outcomes in the ecological scale

- ❖ Electrification rates are linked to the incidence of infantile leukemia in the municipalities of Havana.

-According to the control-case study and the use of multiple correspondences, leading components, discriminate analysis and logistic regression.

- ❖ Primary and Secondary Network Field factors are combined in addition to the family cancer history.
- ❖ The field variable structure in the physical environment of the cases is different from the controls.
- ❖ More than the half of the sick are properly classified with the use of predictors "Cancer history in distantly related relatives, unprotected electric networks and electro-magnetic fields in the housing".
- ❖ Physical, biological and chemical factors are identified as individualized risk factor for infantile leukemia, but when adjusting by confusion factors the OR of

more importance were as follow:

In the general model:

- Electro-magnetic fields in the housing.
- second hand smoking during pregnancy.
- Cancer history in distantly related relatives and environmental pollutants.

The prenatal model includes:

- Electro-magnetic fields in the housing.
- Cancer history in distantly related relatives.
- Second hand smoking

In the postnatal model:

- Respiratory tract diseases history.
- Electrical wiring and electrical appliances.

With basal moderate tones of gamma and electro-magnetic field radiation in the group of the studied housings, small but a coherent higher intensity of ionizing radiation and very low frequency fields are noted in the sick's housing in relation with the healthy ones.

The studied housings present a peculiar ELF and gamma, which are individually peculiar in certain intensities in their interior and surrounding environment, where the combined global structure of the ELF and gamma section contrasts among healthy people's housings, however, it's common the lack of correspondence between ionizing dose and the alternate very low frequency electro-magnetic field.

- Linear model weakly classifies cases and controls, but all the same, the most sensible input to discrimination is allotted to ELF.

-No linear gradient of disparity reason figured out from multiple conditioned logistic models without interactive terms show that risk is increased with the ELF intensity.

- In the studied place and period, the magnetic component of the ELF would explain about 16% of the incidence and gamma dose equivalent to nearly 3% of infantile leukemia.

Taking into account the study outcomes in Havana, the research extended to the cities of Santa Clara and Santiago de Cuba. Obtained data are still in process.

For electro-magnetic fields work a committee made up of different institutions has been created including: Ministry of Communications, Ministry of Industries, Technological University (CUJAE) National Institute of Workers' Health, National Institute of Hygiene, Epidemiology and Microbiology, National Union of Engineers and Architects of Cuba (UNAIC), CIPEL has been created