Report 2013 of Activities in the field of EMF in Germany

Dr. Birgit Keller, Federal Ministry for the Environment,
Nature Conservation and Nuclear Safety, Germany
Division RS II 4

1. Public concern

The German government decided that Germany's energy supply should be generated primarily from renewables by 2050. This requires the energy supply system to be fundamentally restructured.

In Germany, renewable energies are often produced where little or no power is consumed, for example in the case of off-shore wind energy production. The result is that far more energy has to be transported over long distances than ever - especially from the north to the south and the west of Germany. The existing grid is already reaching its limits now. Therefore over the coming years several hundred kilometers of grids need to be reinforced and even more to be built.

In addition, the use of underground cables and high-voltage direct current (HVDC) transmission will be tested. To link networks, generation and load efficiently and intelligently, “Smard Grids” should be used.

Linked to all these is an increasing public discussion about the health risks of electric and particularly magnetic fields. Therefore risk communication is an important project to promote the acceptance of the expansion of electricity networks.

2. Research Activities

The situation of radiation protection with regard of the extensive expansion of power grids in Germany is comparable to the situation in the construction of mobile communication networks about 10 years ago.

Especially the observed statistical association between low frequency fields and a slightly increased risk of childhood leukemia is a cause for discussion of health risks of low frequency fields.

Despite the various efforts in different fields of science, the development of leukemia in children is still poorly understood. Consistent scientific findings show that the development of leukemia is multifactorial. Genetic predisposition, other endogenous factors and external

factors interact. To clarify the causes of the disease, it requires a comprehensive, coordinated research, which is covering all aspects of the pathogenesis.

With a broad research program in Germany the data base is to be improved and the corresponding international projects of WHO and ICNIRP are to be added. To clarify the complex causes of childhood leukemia, 5 feasibility studies were initiated:

- Feasibility study for setting up of a birth cohort
- Investigation of the genetic material of selected cases of childhood acute lymphoblastic leukemia (ALL)
- Pilot study to compare the incidence of childhood leukemia in different countries
- Overview of existing animal models that can be used for leukemia research
- Development of a test method for preleukemic cells with typical chromosomal damages

The so called EMF-Portal of the university of Aachen, Germany, provides a good overview of new research results in the area of the entire frequency range of electromagnetic fields. This is a web-based information platform regarding the effects of electromagnetic fields on humans and on interaction with biological systems. http://www.emf-portal.de

3. New Legislation

Starting in summer 2013 new legal regulations on EMF will apply. They are based on recommendations by ICNIRP, particularly those of 2010. The key provisions are:

- There are regulations for the entire frequency range from 0 to 300 GHz.
- The prescribed limits apply to the places where people reside.
- All high-frequency facilities with more than 10W EIRP, low-frequency installations of more than 1000V and DC systems of more than 2000V must comply with the ICNIRP limits.
- There are special rules for AC systems of 50Hz. The magnetic field is limited to 100µT at places where people are permanently staying. New high voltage lines must not span residential building.
- As part of precautionary measures all options should be realized to minimize the electric and magnetic field of AC and DC power grids, when they are upgraded or newly built. Specific requirements are laid down in a separate provision.