information ventures INC.

Case Study: Literature Review

Client: Naval Undersea Warfare Center (NUWC)

Challenge

The US Navy's extremely low frequency (ELF) Communications System, which transmitted from 70 miles of overhead antennas in Northern Wisconsin and Upper Michigan, communicated with submarines located anywhere in the world using a binary coded signal. Controversy and opposition to the ELF Communications System continued at some level throughout its planning and operation, much of it centered on concern about possible health and environmental effects of the signal. The Navy chose to address this concern with two efforts: a substantial program of directed ecologic and laboratory research using the specific ELF Communications System signal, and a systematic ongoing review and assessment of the international peer-reviewed scientific literature on electromagnetic field (EMF) health and environmental effects, initiated in 1985 and continued until the transmitter was shut down in September 2004. IVI was awarded two successive contracts to provide Navy staff with effective, comprehensive, and independent scientific literature monitoring services and objective analysis of any reported potential adverse effects.

Contribution

IVI identified and analyzed a range of ELF EMF literature including

- epidemiological studies concerning public exposure to electric utility lines (considered the only similar exposure likely to involve substantial numbers of exposed human subjects);
- occupational studies involving exposure to intense ELF fields from electrified rail transport and other specialized facilities;
- basic human physiological studies;
- animal toxicology studies; and

- field and laboratory studies of plants and animals considered relevant to environmental impact (ecologic) issues.

IVI also reviewed and selectively reported on

- basic research studies concerning biological and physical mechanisms of ELF EMF bioeffects;
- cellular studies, including effects on gene expression and mutagenesis or co-mutagenesis (enhancing effects of mutagenic agents);
- immune and endocrine system effects;
- behavioral and neurological effects; therapeutic effects;
- selected radiofrequency studies likely to have a strong impact on the public's perception of EMF health risks; and
- policy studies evaluating EMF research, establishing human exposure guidelines, or proposing policies that might impact on Navy Communications System staff or public perception of health risks.

Every year, IVI staff presented a tutorial to Navy personnel on the latest ELF EMF research developments at an Environmental Review Committee Meeting that was open to the public, including Lac Courte Oreilles Tribal representatives living in Hayward, Wisconsin, near one of the transmitter sites.

Outcome

IVI produced 29 detailed analytical reports and maintained a computerized database and reprint collection of reviewed documents (totaling 6,738 by program end), and assisted Navy staff in dealing with questions from the public and legislators about possible adverse effects from operation of their facility. The Navy's level of concern evidenced by this highly professional, systematic ongoing EMF research monitoring effort helped them maintain a positive relationship with the majority of the public living near the transmitter sites, and may be partly responsible for the Navy's ability to keep the transmitter operating for over 20 years in spite of activist opposition and protests.