

Association between Exposure to Pulsed Electromagnetic Fields and Cancer in Electric Utility
Workers in Quebec, Canada, and France

Am J Epidemiol 1994; 140:805–20.

<http://aje.oxfordjournals.org/content/140/9/805.abstract>

Régie de l'énergie
DOSSIER: R-3770-2011
DÉPOSÉE EN AUDIENCE
Date: 27 MARS 2012
Pièces n°: C-SE-AGLPA -
0036

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Received February 22, 1994.

Revision received June 27, 1994.

Abstract

The authors report the association between **exposure to pulsed electromagnetic fields (PEMFs)** and cancer in a nested case-control study of electric utility workers in Quebec, Canada (follow-up, 1970–1988), and France (follow-up, 1978–1989), among whom 2,679 cases of cancer were identified. Exposures were assessed through a job-exposure matrix based on about 1,000 person-weeks of measurements from exposure meters worn by workers. Exposures were considerably higher in Quebec than in France. No association was found between PEMFs and cancers previously suspected of association with magnetic fields (leukemia, other hematopoietic cancers, brain cancer, or melanoma). **However, there was a clear association between cumulative exposure to PEMFs and lung cancer, with odds ratios rising to 3.11 (95% confidence interval (CI) 1.60–6.04) in the highest exposure group (84 cases). This association was largely confined to Quebec, where there was a monotonic exposure-response relation with an odds ratio of 6.67 (95% CI 2.68–16.57) in the highest exposure group (32 cases). The association is substantial and was not explained by smoking or other occupational exposures.** However, several factors limit the strength of the evidence for a causal relation: lack of precision in what the meters measured; little previous evidence for this association; and no elevated risk for lung cancer in the utility workers overall in comparison with the general population.
