

ANALYTICALLY SPEAKING

The column of our corresponding editor

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RAYS-ING AND LOWERING FEARS

If the answer is EMF, what is the question?

No, the question wasn't, "What is the acronym for electromotive force?", that's out of date. EMF now stands for electromagnetic radiation, one of the latest scare items to come into prominence through a little research and a lot of publicity. It also goes by the acronym ELF (extremely low frequency fields). Sort of a double dose of fear.

EMF-ELF first came to my attention in an INDUSTRIAL RESEARCH news item in 1976¹ wherein scientists at Stanford reported that "earth's radiation belt can be altered by harmonic very low frequency radiation from electric power lines". This doesn't seem too threatening, does it? Just a baby effect. But in the words of a women's cigarette ad, "You've come a long way, baby." Over the years these rays have taken on a more sinister

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aspect, fueled by a series of articles in the NEW YORKER magazine², which is a sort of handbook for the sophisticated. These articles mainly dealt with power lines over homes wherein milliGauss reading of 2 or 3, for example, were noted. SCIENCE published a an article the following year³, and reported in December 1992 on a San Diego meeting at which some Swedish researchers claimed correlations with EMF and cancers⁴. A study funded by the US Office of Science and Technology Policy gave a different conclusion - essentially saying the data were inconclusive. In SCIENCE⁵ several letters to the editor continued this argument in April of this year. A number of other discussion articles have appeared in the technical journals.

The popular press in the meantime has been having a field day; USA TODAY (which has the largest circulation in the country) had a front page story on 8 April 93. The headline screamed "Lawsuit calls power lines cancer threat." A table labeled "The danger" served up some sources and maximum milliGauss. Typical were can opener (20), electric shaver (150) high voltage power line (500). The lawsuit mentioned was dismissed a few weeks later, but one can rest assured that this subject will not be dismissed. As the headline in R&D MAGAZINE for April 1993 succinctly put it, "Worry Over Power Lines Likely to Last".

The subject of risk is fascinating, and an excellent book is H.W. Lewis, "Technological Risk" (1990). Lewis devotes a short chapter to EMF and concludes that the danger is far from proved. In all of this one is reminded of the turmoil over low level radiation from radioactive sources: it seems impossible to prove or disprove anything. Several months before the USA TODAY story, the Knoxville NEWS SENTINEL ran a large ad: