Health effects of people living near powerlines in the Stoke-on-Trent area

The scientific literature contains a significant number of reports of a range of illnesses, associated with power frequency electric and magnetic fields, including those from powerlines. While some of these illnesses are rare, others are more prevalent. For example, in its review of studies the California Health Department EMF Report (2002) classified miscarriage as Class 2B, possibly causal. In the UK, an EMF link with depression was investigated in the late 80s in the West Midlands by the Wolverhampton GP the late Dr Stephen Perry and in Southampton by Dr David Dowson. Both of these GPs found a clear association between EMF exposure and clinically diagnosed depression as well as increased frequency of headaches, migraines and related symptoms. Dr Perry also be noted an increased incidence of ischemic heart disease in those living near high voltage powerlines.

If these reports represent causal associations then they should be seen in further studies. The relative rarity of cancer is such that this may be hard to detect with good statistics in a neighbourhood cohort. However, for more common endpoints such as depression and miscarriage, excess incidence might be seen near powerlines in a relatively small cohort.

To test this hypothesis the Trentham Environmental Action Group, in conjunction with other concerned groups, carried out three independent surveys of people living near high voltage powerlines in the Stoke-on-Trent area. The first survey was conducted during spring 2002, the second, autumn 2005 and the third, September 2006. In each case a neighbourhood was identified with similar types of houses which were not near major roads or sources of industrial pollution. EMF exposed residents were identified as those living within 25 metres of a high voltage powerline and unexposed residents as those living more than 25 metres away. In each survey, exposed and unexposed residents were sent a questionnaire in which they were asked if to provide details of their health experience. For the exposed residents, at no time were they prompted to the fact that they lived near a powerline, nor the types of illnesses associated with powerlines in the scientific literature. However, some residents were clearly aware of the purpose of the questionnaire. In the design of the questionnaire care was taken to distinguish between self-reported illnesses of a purely anecdotal nature and those that had been diagnosed by their GP resulting in prescribed treatment and/or hospitalisation.

For the three surveys, the number of questionnaires sent/returned in those living <25 m from powerlines and those >25 m away, were respectively: 162/113, 102/83; 130/67, 0/0; 100/72, 100/69. For survey two, most residents lived close to a 400 kV powerline and therefore the unexposed residents from survey one were used as their comparison group.

The combined results for both males and females are given in figure 1. Values have been scaled to correspond to equal numbers of questionnaires returned from those exposed and unexposed. Table 1 provides a breakdown of results where for depression, headache, insomnia and dietary problems the distinction between purely self-reported and clinically diagnosed cases, including hospitalisation, is given. A clear excess in depression and associated symptoms of headache and insomnia is evident in the group living within 25 m of powerlines. Particularly evident is the large excess cases of miscarriage: 35 cases near powerlines against 5 in the unexposed group. A number of cases of cancer in adults and children were reported in those living near powerlines, but none were reported from the unexposed group. The excess cases of dietary problems in those living near powerlines have not been widely reported in the peer reviewed literature but appear to be a feature in all three surveys. Survey 1 note; We identified 6 suicides within close proximity of each other and to the powerlines but these are not included on the graph respecting the sensitivities of those families concerned.

In summary, the results of these surveys continue to show serious adverse health outcomes in those living near high voltage powerlines in accordance with those reported in the peer-reviewed scientific literature, further underlining the concerns of residents living near high voltage powerlines.

Figure 1

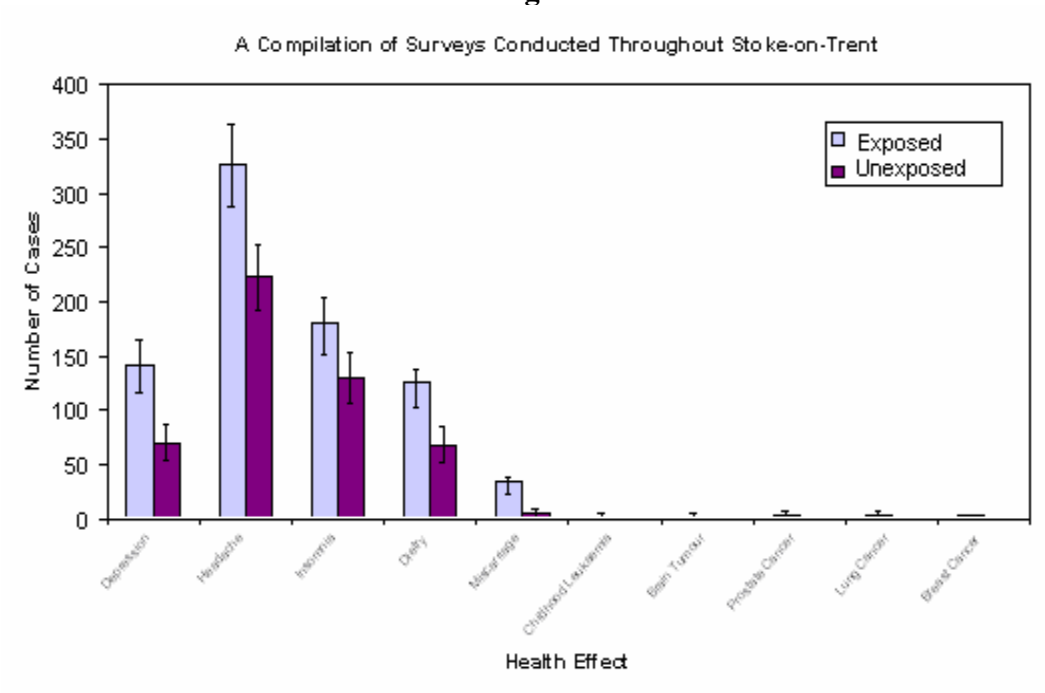

Table 1: Pooled findings from three surveys from the Stoke-on-Trent area (Males and females combined and scaled for equal number of questionnaire from exposed and unexposed residents)

Health endpoint		Living <25 m of powerline	Living > 25 m from powerline
Depression:	Total reported	141	71
	No. requiring doctor	35	3
	No. requiring hospital	10	2
Headache:	Total reported	327	223
	No. requiring doctor	19	5
	No. requiring hospital	4	2
Insomnia:	Total reported	181	130
	No. requiring doctor	15	4
	No. requiring hospital	3	-
Dietary:	Total reported	126	68
	No. requiring doctor	23	5
	No. requiring hospital	14	1
Miscarriage		35	5
Cancer:	Childhood Leukaemia	2	-
	Brain Tumour	3	-
	Prostate Cancer	2	-
	Lung Cancer	3	-
	Breast Cancer	4	-

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