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*Denis L Henshaw*  
*Professor of Physics*

17<sup>th</sup> May 2007

Dr Howard Stoate MP  
House of Commons  
London  
SW1A 0AA

Dear Dr Stoate

**Stakeholders Advisory Group for ELF-EMF, SAGE - 1<sup>st</sup> Interim Report**

We have not formally met, but we carry out research into the health effects of exposure to power frequency electric and magnetic fields (ELF-EMFs) funded by CHILDREN WITH LEUKAEMIA. I am also a member of SAGE and I am writing to raise a specific issue in the SAGE Report.

While the Government has accepted that there is an association between exposure to ELF-EMFs and increased risk of childhood leukaemia, the impression is being given that this accounts for only 2 cases of the disease per year in the UK and that only one of these cases would be specifically associated with powerlines. These figures are potentially significant underestimates because they may only represent the 'tip of the iceberg' values revealed in the epidemiological studies.

In public health protection against exposure to a carcinogenic agent it is usual to estimate the number of attributable cases using a so-called *linear no-threshold model* (LNT), that is, to assume that the measured risk at high exposure decreases linearly with decreasing exposure and is only zero at zero exposure. If we apply such a model to EMFs then this would suggest that annually around 60 cases of childhood leukaemia would be attributable to magnetic field exposure associated with the electricity supply.

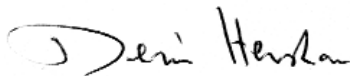
Even this figure of 60 attributable cases per year might be an underestimate. As you are aware, the 2005 study by Draper *et al* reported increased risk of childhood leukaemia up to 600 metres from National Grid 275 and 400 kV powerlines in England and Wales, which is well beyond the range of the direct electric and magnetic fields whose influence is unlikely to be felt beyond 200 metres. On the other hand, corona ion emitted from powerlines can be carried considerable distances away. Such

ions deposit their electric charge on particles of air pollution so that when those particles are inhaled they have a higher probability of becoming trapped in the lung. This may then result in increased incidence near powerlines of a number of illnesses associated with air pollution, including childhood leukaemia.

If the Draper *et al* findings were replicated for the more numerous 132 kV powerlines, which also have a greater tendency to cross populated areas, then this might suggest up to 25 cases of childhood leukaemia annually specifically associated with powerlines in the UK. These would essentially be in addition to the above 60 cases of childhood leukaemia attributed to magnetic fields from the electricity supply in general.

There are many other issues arising out of the SAGE Report which in my opinion add to the evidence of adverse health effects in a manner which would justify implementing the so-called powerline corridor option as described in the Report. Meanwhile, I hope that the information provided in this letter is of value.

Yours sincerely

A handwritten signature in black ink that reads "Denis Henshaw". The signature is written in a cursive style with a large initial 'D'.

Professor Denis L Henshaw