

Doubt cast over air pollution link between childhood leukemia and power lines

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Credit: Tony Boon/Wikipedia

Researchers from the UK have called into question a theory suggesting that a previously reported risk of leukaemia among children born close to overhead power lines could be caused by an alteration to surrounding air pollution.



In a study published today, 31 October, in the *Journal of Radiological Protection* (the official journal of the Society for Radiological Protection), the researchers have found little evidence to support the 'corona-ion hypothesis' which has been cited as a possible explanation for the excess of <u>childhood leukaemia</u> cases close to high-voltage overhead power lines in the UK prior to the 1980s.

The 'corona-ion hypothesis' is based on the fact that high-voltage overhead power lines create charged particles in the surrounding air by a process known as ionisation.

On occasions, these ionised particles, known as corona ions, can be blown away by the wind and attach to air pollutants, such as those from traffic or smoking. The 'corona-ion hypothesis' suggests that these electrically charged pollutants are more likely to be retained in the airways or lungs and that this could lead to serious health effects, including childhood leukaemia.

The researchers, from the Childhood Cancer Research Group at the University of Oxford and National Grid, have previously shown that on average in recent decades there has been no increased risk of leukaemia among children born near <u>high-voltage power lines</u>; however, the same piece of research confirmed an increased risk prior to the 1980s, which has yet to be explained.

To investigate this theory, the researchers used data from over 7,000 children in England and Wales who were born and diagnosed with leukaemia between 1968 and 2008, and who lived within 600 m of a high-voltage overhead power line.

The researchers calculated the exposure of each of the subjects to corona ions using a model based on: the voltage of the <u>power line</u>; the distance from the line; how the concentration of corona ions varied with



distance from the power lines; and, using data from various meteorological stations, the amount of time, and speed, that wind blew in each direction around the power lines.

The results did not suggest that exposure to corona ions explained the pattern of increased leukaemia rates close to high-voltage overhead power lines previously found in earlier decades.

Co-author of the study Kathryn Bunch said: 'We found in earlier studies that, for previous decades, childhood leukaemia rates were higher near power lines. This new paper seems to show that this wasn't caused by corona ions – but it leaves us still searching for the true cause and we are undertaking further investigations of the variation in risk over time.'

Childhood leukaemia is the most common form of <u>childhood cancer</u> and accounts for around a third of all cancers diagnosed in children. Around 460 new cases of leukaemia are diagnosed in children under the age of 15 each year in the UK.

More information: 'Childhood cancer and exposure to corona ions from power lines: an epidemiological test' J Swanson et al 2014 *J. Radiol. Prot.* 34 873. <u>iopscience.iop.org/0952-4746/34/4/873/article</u>

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