

Wi-Fi in Wigmore Primary: need for caution?

Summary of findings

Wireless radiation, like mobile phones, is in the microwave part of the spectrum.

Like mobile phones (but unlike TV and radio), wireless radiation is pulsed. The threshold for health risks is much lower for pulsed radiation than for continuous wave radiation and government guidelines haven't caught up with this.

There is much independent research showing the damaging effects on the body – including some that trigger cancers – of this type of radiation, undertaken for studies on mobile phone effects. This, however, is largely ignored in favour of industry research supporting the 'lack of evidence' of harm from Wi-Fi networks, based on the fact that nothing much has shown up from that particular type of installation, even though its physiological effects are likely to be similar to that of mobile phones.

Note that despite other claims, a child in a room of 20 transmitters (i.e. in laptops) will be exposed to nearly a third the amount of pulsed, microwave radiation as if she were on a mobile phone – a significant dose over long periods. Note also that most health effects, if they occur, are likely to present in the longer term and to be serious – rather than immediate and reversible.

The chances of adverse health effects may well be statistically very small, but they may not be. It seems wise not to dismiss them for convenience, when no-one knows for sure.

In more detail:

1. Effects on health

- There are innumerable anecdotal reports of symptoms associated with exposure to Wi-Fi networks, such as loss of concentration, headaches, fatigue, memory and behavioural problems. Some of these are reported by teachers who have since recovered following the removal of the wireless networks from their schools. Can provide details if required.
- Official advice says that children under 16 should not be exposed for long periods to the pulsed electromagnetic radiation from devices such as mobile phones and cordless home phones. The electromagnetic radiation from wireless networks is similar, and also pulsed. Very young children are considered especially vulnerable.
- Worries about increased likelihood of cancers in the longer term are backed up by research, references to which can be obtained if required. Some examples:
 1. Peer-reviewed replicated research shows reduction in melatonin production in people exposed to periodic amplitude modulated (i.e. pulsed) radiation – of which wireless transmissions are one type. Melatonin regulates sleep and protects against cancer formation. This is substantiated by statistically significant increases in cancers around

mobile phone mast installations and sleep problems experienced by many living close to masts.

2. Other research shows this type of radiation allows transfer of toxins from the bloodstream into brain cells, with the effect of increased headaches, nausea, dizziness and disorientation. Research has indeed found higher incidences of these symptoms around masts.
 3. Two years ago a four-year EU funded research project involving twelve institutions from seven countries reported multiply replicated results of single- and double-strand breaks in DNA chains, of the sort that lead to cancer, as a result of this type of radiation at levels within the UK government's 'safety' guidelines. They stated categorically that it was no longer possible to say that we don't know how this sort of radiation could cause health problems.
 4. The Washington-based Wireless Technology Research programme of 1993, comprising 56 studies run over five years, found the following biological effects at sub-thermal (i.e. very low) levels of exposure to mobile phone handsets: opening of the blood-brain barrier with subsequent leakage of large albumin molecules into the brain, leading to formation of micronuclei, an indication for the triggering of cancer; disruption of DNA function, including negative impact on DNA repair mechanisms; higher cancer mortality (although people had only been using phones for circa 5 years); more than twice the risk of neural epithelial tumours; significant correlations between the side of the head where the phone was held and the location of tumours.
- Don't think it's fair to compare Wi-Fi installations with mobile phones? Powerwatch has corrected the reassuring (but misleading) comparison with mobile phone exposure (can show calculations) to reveal that in fact it takes only one hour in a classroom of 20 wireless-LAN enabled PCs to provide the same exposure to pulsed microwave radiation as is produced by 20 minutes on a mobile phone running at typical power levels. Note too that in a classroom situation, the whole body absorbs this power, causing a 'total body burden' that is closer to that caused by a mobile phone.
 - Think we're drowning them in TV and radio signals anyway so it doesn't matter? Not true: FM Radio transmissions are at about 100 MHz, and TV between 450 and 850 MHz, considerably lower than the frequency of wireless. Moreover, of critical importance, radio and TV transmissions are continuous wave transmissions, and do not rely on pulsed signals. This is crucial, because it highlights that we will be surrounding our children with radiation that is unlike anything they have been exposed to previously on a continuous basis. It may be safe and it may not be, but the argument that it is safe because has been around for years is false.
 - Finally: a survey just published by the EU reports that two out of three people in the UK believe radiation from mobile phones has damaged their health (the figure is higher across Europe – three quarters) and nearly all of them thought government assurances and protection measures against the risks

from electromagnetic radiation were inadequate. (Independent on Sunday, 8 July 2007.)

2. Words of caution from prominent people

- Professor Dennis Henshaw, professor of human radiation at Bristol University has called for an inquiry into the dangers of Wi-Fi wireless internet technology. (30 April 2007.) 'The research hasn't been done. Therefore we cannot assume that there are no effects,' he told the Independent on Sunday. 'This technology is being wheeled out without any checks and balances.'
- The chairman of the Health Protection Agency, Sir William Stewart, has called for an official investigation into the health effects of the electromagnetic fields generated by Wi-Fi devices.
- Adam Price MP said Wales should follow the lead of Canada, where schools no longer used microwave signals to link computer terminals and laptops. One school in his Carmarthenshire constituency, Ysgol Pantycelyn, Llandovery, has removed the technology because of parental concern and the county is currently considering whether to allow Wi-Fi in its schools at all.
- Alasdair Phillips, director of Powerwatch, has written a comprehensive letter advising schools to use wired networking.
- The director of public health for Salzburg, Dr Gerd Oberfeld, has written an open letter of warning on the subject calling on schools in his region not to install Wi-Fi networks. (I have a copy if anyone wants to see it: it is strongly worded.)
- An Associate Professor at the Department of Neuroscience at the Karolinska Institute in Stockholm has sent an advisory letter to Swedish school governors (supplied).
- Ian Gibson, a former chairman of the Commons Science and Technology Committee and honorary Professor and former Dean of the School of Biological Sciences at the University of East Anglia, said: 'We need a departmental inquiry into this situation. The Department of Health should be looking into it seriously.'
- An unpublished report by Becta, the educational technology agency, is raising fresh concerns about the possible health effects of wireless computer networks in schools, saying they could cause headaches. The report said the radiation produced by any device involving wireless technology raised health and safety questions.

- Philip Parkin, the general secretary of the Professional Association of Teachers, has called for a full investigation into the networks. 'We continue to be concerned about the possible effects of WiFi, particularly on children whose brains and bodies are still developing,' he said.

3. Objectivity of industry claims

- Many letters to the papers have expressed concerns that our young people are being exploited by the wireless industry, which is conducting an experiment condoned by government because of its benefits to the economy.
- Much of the research that finds in favour of the industry position is funded by industry (recall the tobacco industry). This is of course the research that is quoted by suppliers, and also tends to be the research that is quoted in the papers, because of the vast funding behind its lobbying and PR efforts. Genuinely independent research is rare and struggles for funding. We should make decisions based on common sense, and try not to rely on biased industry research.
- The official justification that 'W-LAN equipment works within the legal guidelines' is out of date and inadequate for this purpose. The legal basis for this, the Electromagnetic Fields Ordinance of 1996, set the guidelines based only on the thermal effects of this radiation; pulsed high frequency fields are proven to have effects at power flux densities much lower than the thermal threshold. To protect public health it is therefore no longer sufficient to apply the old, inadequate guidelines, but needs a new precautionary approach.

4. Cost and reliability

- Laptops are more expensive and less reliable than PCs.
- Wireless networks are less reliable and require more expensive maintenance than wired networks.
- See Jane's comparison chart for actual installation costs.

Much of this information has been taken from <http://www.powerwatch.org.uk/> , <http://www.hese-project.org/hese-uk/en/main/index.php> and <http://www.electrosensitivity.org.uk/>. Appropriate credits and references can be supplied on request.