

Danger on the airwaves: Is the Wi-Fi revolution a health time bomb?

It's on every high street and in every coffee shop and school. But experts have serious concerns about the effects of electronic smog from wireless networks linking our laptops and mobiles, reports Geoffrey Lean

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Being "wired-up" used to be shorthand for being at the cutting edge, connected to all that is cool. No longer. Wireless is now the only thing to be.

Go into a Starbucks, a hotel bar or an airport departure lounge and you are bound to see people tapping away at their laptops, invisibly connected to the internet. Visit friends, and you are likely to be shown their newly installed system.

Lecture at a university and you'll find the students in your audience tapping away, checking your assertions on the world wide web almost as soon as you make them. And now the technology is spreading like a Wi-Fi wildfire throughout Britain's primary and secondary schools.

The technological explosion is even bigger than the mobile phone explosion that preceded it. And, as with mobiles, it is being followed by fears about its effect on health - particularly the health of children. Recent research, which suggests that the worst fears about mobiles are proving to be justified, only heightens concern about the electronic soup in which we are increasingly spending our lives.

Now, as we report today, Sir William Stewart (pictured right), the man who has issued the most authoritative British warnings about the hazards of mobiles, is becoming worried about the spread of Wi-Fi. The chairman of the Health Protection Agency - and a former chief scientific adviser to the Government - is privately pressing for an official investigation of the risks it may pose.



Health concerns show no sign of slowing the wireless expansion. One in five of all adult Britons now own a wireless-enabled laptop. There are 35,000 public hotspots where they can use them, usually at a price.

In the past 18 months 1.6 million Wi-Fi terminals have been sold in Britain for use in homes, offices and a host of other buildings. By some estimates, half of all primary schools and four fifths of all secondary schools have installed them.

Whole cities are going wireless. First up is the genteel, almost bucolic, burgh of Norwich, which has installed a network covering almost the whole of its centre, spanning a 4km radius from City Hall. It takes in key sites further away, including the University of East Anglia and a local hospital, and will be expanded to take in rural parts of the south of the county.

More than 200 small aerials were attached to lamp posts to create the network, which anyone can use free for an hour. There is nothing to stop the 1,000 people who use it each day logging off when their time is up, and logging on again for another costless session.

"We wanted to see if something like this could be done," says Anne Carey, the network's project manager. "People are using it and finding it helpful. It is, I think, currently the largest network of its kind."

Not for much longer. Brighton plans to launch a city-wide network next year, and Manchester is planning one covering over 400 square miles, providing free access to 2.2 million people.

So far only a few, faint warnings have been raised, mainly by people who are so sensitised to the electromagnetic radiation emitted by mobiles, their masts and Wi-Fi that they become ill in its presence. The World Health Organisation estimates that up to three out of every hundred people are "electrosensitive" to some extent. But scientists and doctors - and some European governments - are adding their voices to the alarm as it becomes clear that the almost universal use of mobile phones may be storing up medical catastrophe for the future.

A recent authoritative Finnish study has found that people who have used mobiles for more than ten years are 40 per cent more likely to get a brain tumour on the same side of the head as they hold their handset; Swedish research suggests that the risk is almost four times as great. And further research from Sweden claims that the radiation kills off brain cells, which could lead to today's younger generation going senile in their forties and fifties.

Professor Lawrie Challis, who heads the Government's official mobile safety research, this year said that the mobile could turn out to be "the cigarette of the 21st century".

There has been less concern about masts, as they emit very much less radiation than mobile phones. But people living - or attending schools - near them are consistently exposed and studies reveal a worrying incidence of symptoms such as headaches, fatigue, nausea, dizziness and memory problems. There is also some suggestion that there may be an increase in cancers and heart disease.

Wi-Fi systems essentially take small versions of these masts into the home and classroom - they emit much the same kind of radiation. Though virtually no research has been carried out, campaigners and some scientists expect them to have similar ill-effects. They say that we are all now living in a soup of electromagnetic radiation one billion times stronger than the natural fields in which living cells have developed over the last 3.8 billion years. This, they add, is bound to cause trouble

Prof Leif Salford, of Lund University - who showed that the radiation kills off brain cells - is also deeply worried about wi-fi's addition to "electronic smog".

There is particular concern about children partly because they are more vulnerable - as their skulls are thinner and their nervous systems are still developing - and because they will be exposed to more of the radiation during their lives.

The Austrian Medical Association is lobbying against the deployment of Wi-Fi in schools. The authorities of the province of Salzburg has already advised schools not to install it, and is now considering a ban. Dr Gerd Oberfeld, Salzburg's head of environmental health and medicine, says that the Wi-Fi is "dangerous" to sensitive people and that "the number of people and the danger are both growing".

In Britain, Stowe School removed Wi-Fi from part of its premises after a classics master, Michael Bevington - who had taught there for 28 years - developed headaches and nausea as soon as it was installed.

Ian Gibson, the MP for the newly wireless city Norwich is calling for an official inquiry into the risks of Wi-Fi. The Professional Association of Teachers is to write to Education Secretary Alan Johnson this week to call for one.

Philip Parkin, the general secretary of the union, says; "I am concerned that so many wireless networks are being installed in schools and colleges without any understanding of the possible long-term consequences.

"The proliferation of wireless networks could be having serious implications for the health of some staff and pupils without the cause being recognised."

But, he added, there are huge commercial pressures" which may be why there has not yet been "any significant action".

Guidelines that were ignored

The first Stewart Report, published in May 2000, produced a series of sensible recommendations. They included: discouraging children from using mobiles, and stopping the industry from promoting them to the young; publicising the radiation levels of different handsets so that customers could choose the lowest; making the erection of phone masts subject to democratic control through the planning system; and stopping the building of masts where the radiation "beam of greatest intensity" fell on schools, unless the school and parents agreed.

The Government accepted most of these recommendations, but then, as 'The Independent on Sunday' has repeatedly pointed out, failed to implement them. Probably, it has lost any chance to curb the use of mobiles by children and teenagers. Since the first report, mobile use by the young has doubled.

Additional reporting by Paul Bignall, Will Dowling and Jude Townend