

Transcript: Wi-Fi

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PANORAMA

Wi-Fi: a warning signal

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JEREMY VINE: Good evening. I'm Jeremy Vine. It's 8.30 and this is Panorama. The jury is still out on whether mobile phone masts can damage your health. The government's chief scientist advises caution. So if parents don't want masts situated close to schools, why are they now being put inside classrooms?

ALASDAIR PHILIPS: Yes, that's quite spectacular.

VINE: Is it?

PHILIPS: Yes.

VINE: There's a revolution going on and it's happening all round us. Wireless communications give us the freedom to use computers in the same way that we use mobile phones. The martini way - any time, any place, anywhere. The British Government is determined to catch this wi-fi wave and is installing the technology in all our schools. But does long-term exposure to wi-fi carry any health effects?

PAUL KENYON: It's the new hi-tech way of connecting to the internet. No wires, no modem, just radio waves, pulsing information through a network of mini masts. Emails, websites, films, crackling through the skies. The explosion in the use of wi-fi means it's fast becoming unavoidable, but there's a catch. Radio frequency radiation! An invisible smog! The question is, is it affecting our health?

PAUL KENYON It's in homes, work places, restaurants, schools, entire cities are becoming what are known as wi-fi hotspots. You might be sitting in one right now even as you watch this programme without even knowing. It's a similar type of radiation to that emitted from mobile phones and masts. They've led to protests and even sabotage from those convinced the radiation is causing harm. And there have been a growing number of scientific studies which appear to back them up. Despite that, the government has been racing ahead. In 2000 it rolled out a new generation of more powerful phone technology and auctioned off the masts to go with it for several billion pounds.

GORDON BROWN: [chats with Tony Blair] This is what we get all the money for. We raised 22 billion from this sale and we were very generous.

SIR WILLIAM STEWART Chairman, Health Protection Agency But a mobile phone, that's a matter of personal choice. You can decide whether you want to use a mobile phone or not, and if you don't want to be radiated you

don't switch on your mobile phone, but you have control over the situation, that's the big difference.

KENYON: Sir William Stewart has a pedigree it would take a bold politician to ignore. Chief Scientific Adviser to Margaret Thatcher, and then called upon by Tony Blair's government in 2000 to examine mobile phones, masts and their impact on our health. After looking at the evidence for a year, he couldn't rule out the possibility there may be biological effects.

STEWART: It means that basically there may be changes for example in cognitive function. Secondly there was some indications that there maybe cancer inductions. Thirdly there were some molecular biology changes within the cell and these were issues that we had to bear in mind as one came to one's broad conclusions.

KENYON: The report made a raft of recommendations. At the heart of it the question that had been worrying so many - should our children be exposed to mobile phone masts? Sir William was concerned enough to recommend what he called: "a precautionary approach."

STEWART: We recommended, because we were sensitive about children that masts should not necessarily impact directly on areas where children were exposed, like playgrounds and that.

KENYON: The government knows Sir William has concerns about siting masts near schools. Why then are we now placing them inside classrooms in the form of wi-fi mini masts? They emit the same sort of radiation, so what's its potential impact in the classroom. We went to a school in Norwich to find out. The idea to compare the level of radiation from a typical mobile phone mast with that of a wi-fi enabled laptop in the classroom.

We're about 100 metres away from the mast here.

KENYON: The man who'll take the readings is an electrical engineer called Alasdair Philips. He runs a lobby group called Powerwatch which raises awareness of electromagnetic smog, but he's also taken measurements for industry and helped advise the government.

So we're in the main beam, this is sort of highest radiation, is it?

ALASDAIR PHILIPS Electrical Engineer, Powerwatch Yes, it's where the main beam of radiation comes down to ground, so basically the highest point of the signals, yeah.

KENYON: Okay, so let's measure it then, okay, so let's see how it compares with the school then. Okay?

PHILIPS: Indeed.

KENYON: If the level in a classroom is similar to the mast, children are sitting in similar radiation on a daily basis. We chose a comprehensive school nearby with more than a thousand pupils. The school signed up to wi-fi installing it in 9 of its classrooms with plans to expand. It's part of the government's push for schools to go hi-tech. They call it: "A magical system."

KENYON: Right, this is where they sit and they're already all logged on.

PHILIPS: Oh yes, it's logged onto the network, yes.

KENYON: Take the measurement of these...

PHILIPS: Well make sure this is set on the right scale and we will download player. Okay, yes, that's quite spectacular.

KENYON: Is it?

PHILIPS: Yes. That's about three times what we were getting at that phone mast.

KENYON: It's particularly significant for children. Their skulls are thinner and still forming. Tests have shown they absorb more radiation than adults when using mobile phones, and with the explosion in masts, phones, and now wi-fi, this generation, like none before, will live in it from cradle to grave.

Are you surprised?

PHILIPS: Well yes, I'm very surprised, yes it's higher than I'd expected standing at this distance, which is just at the distance the pupil is likely to be at.

KENYON: I was going to say, that's where a child's head would be around here, isn't it.

PHILIPS: Absolutely, yes that was definitely higher than I expected. It's only there.. not there continuously but it's obviously there quite a lot of the lesson if you're downloading files from the internet.

KENYON: So we took the first measurement here in what's called the beam of greatest intensity from the mast. The advice from Sir William Stewart to the government was that this beam shouldn't fall on any part of a school's grounds, unless the school and the parents agreed. But the levels of radiation inside the classroom were far higher, three times the strength of the nearby mast - not continuously but during downloads. These are controversial findings that must be repeated and verified.

Philip Parkin General Secretary Professional Association of Teachers I think schools and parents will be very worried about it. I'm asking for schools to consider very seriously whether they should be installing wi-fi networks now, this will make them think twice or think three times before they do it.

KENYON: In fact around 70% of our secondary schools already have wi-fi and nearly half our primary schools. Panorama spoke to 50 of them and only one had been warned of possible health effects. But elsewhere concerned parents and teachers at four schools have sent wi-fi packing, asking why not hardwire the classroom instead and be risk-free. And in some schools teachers are complaining the system is making them ill.

PARKIN: The precautionary approach doesn't seem to have worked because it is being rolled out so rapidly and it's out there now. It's a bit like King Canute, you know, we can't stop the tide, and I'm afraid if schools are told that there is a serious health implication for having these networks in their schools it's going to be a very serious matter to say to schools you've got to

switch them off.

KENYON: The levels we found in the classroom are well within UK safety limits, even 600 times below, and the government says anything beneath them poses no known adverse health effects. So why are world renowned scientists so concerned they're now speaking out to Panorama? It's because they suspect the whole basis of our safety limits may be wrong, that they're set according to a distorted picture of science.

If you look at the position of our government on this you'd think there's only a small handful of fringe academics anywhere in the world who found adverse health effects with this form of radiation, people whose views can easily be dismissed. But that simply isn't the case.

There have been no studies on long-term wi-fi exposure, but there have been thousands on mobile phones and masts which emit similar levels of radiation. They include work by world leaders in the field. We spoke to some of them via the internet. From the University of Washington Professor Henry Lai, a biologist respected by both sides of the argument. He's found health effects at radiation similar to wi-fi over 30 years of research.

How many studies are there out there?

HENRY LAI: I would say there must be two or three thousand at least.

KENYON: He did his own review of all the experiments on mobile phones to see how many found an effect.

Professor HENRY LAI University of Washington, Seattle It's about 50-50. Fifty percent find effect and fifty percent did not find any effect at all.

KENYON: Doctor Gerd Oberfeld from Salzburg, a government scientist who is calling for wi-fi to be removed from schools in Austria. He too had found health effects at similar levels of radiation to wi-fi.

Dr GERD OBERFELD Public Health Department, Salzburg If you go into the data you can see a very, very clear picture. It's like a puzzle and everything fits well together from DNA breaks, DNA damage, up to animal studies and up to the epidemiological evidence that shows for example increased symptoms as well as increased cancer rates.

KENYON: And over in Sweden there's the world renowned Karolinska Institute. It's where we met Doctor Olle Johansson. He conducted experiments at lower levels of radiation than wi-fi and found biological effect.

The UK government will say there are no known adverse health effects from this form of radiation. Is it accurate information that they're giving out?

Professor OLLE JOHANSSON Karolinska Institute, Sweden No, no, I don't think so. If you look in the literature you have a large number of various effects like chromosome damage, you have impact on the concentration capacity and decrease in short-term memory, increases in the number of cancer incidences and so on. I mean there is a large number of various areas here.

KENYON: And yet we're told by the authorities in the UK there are no

known adverse health effects.

JOHANSSON: Well that's very odd I must say.

KENYON: His pioneering research work has led him to a minority group who appear to become physically ill when exposed to this kind of electro smog. They're called electro-hyper-sensitives.

JOHANSSON: People with electro-hyper-sensitivity generally feel that something is wrong. You and I we don't. And the question then is of course 25 years from now on will we have some form of cancer, neurological disease or something? We don't know.

KENYON: Just because we can't feel it.

JOHANSSON: No, we don't feel it. We don't get the warning signal.

KENYON: One of the possible electro-sensitives he's met lives in Lincolnshire close to a mobile phone mast. She's just participated in an important laboratory study. If she's genuinely affected, a kind of human antenna, then there's potentially generations of people behind her who could also be.

Just try and describe it for us, the feeling.

SILVIA WILSON My head feels hot, burning. My face feels burning. I feel like as if I'm gonna be sick. My stomach feels uncomfortable. Yeah and I just feel a very sharp pain at the back of my head.

KENYON: So what about the lab tests? Well they've only just finished. They were independently funded and carried out by the University of Essex. Participants who were exposed to the levels of radiation typically admitted by phone masts which, as we've seen, can be far lower than wi-fi. Silvia could tell when the mast was on or off two thirds of the time. The rest of the participants' results are still being analysed.

This is where some of the radiation is quite bad, is it?

SILVIA: Yeah, it's very bad.

KENYON: The evidence is still unclear when it comes to Sylvia's results. But she feels she's needed silver foil shielding ever since they moved near the mast.

My goodness me. (foil-lined bedroom) It's like being in a huge oven, isn't it.

SILVIA: It is, yeah. Because people they don't understand that foil actually can stop some of the microwaves. I'm gonna show you what it does to microwaves.

KENYON: Okay. So this is the area where we heard that there was quite a strong signal.

Her radiation monitor converts the signal from the mast into sound.

SILVIA: The foil will block some of the signal.

KENYON: Yes.

If Silvia's symptoms are because of radiation, everything changes. It means there can be a biological effect at levels as low as that from wi-fi. It would throw our limits out of the window and put a question mark over the wi-fi revolution.

STEWART: I sympathise with Silvia Wilson very much because I just suspect that there might be something in this.

KENYON: How significant would that be?

Sir WILLIAM STEWART Chairman, health Protection Agency Well the problem is that we simply do not know. I mean it can, as I said, did not necessarily mean disease but it might. I mean it might simply be that it's got no effect but it's not worth worrying about at all or it might be that these are the human canaries of the future.

KENYON: Entire cities in the UK are now wi-fi hotspots, 11 of them in all, and the number is growing. Liverpool, Manchester, Edinburgh, Brighton, the city of London. Some run by BT, others by a company called The Cloud. And when you're outdoors, the radiation is becoming increasingly difficult to avoid. Five miles outside Norwich and not a sniff of a connection. In the suburbs a flicker of a signal, probably from people's home wi-fi routers, and in the city centre - there you go, it looks like we've got completely cable free connectivity. But others would say this makes Norwich a city of virtual smog.

Norwich was the first UK city to pilot a government funded wireless network. In other cities it's BT and The Cloud charging users. But the government were so keen on wi-fi it launched the Norwich service for free. You can see the mini masts or nodes, 200 of them in all, which sustain the network and create a pool of connectivity. We went around the city centre with a radiation monitor.

Went into the red there. We're getting quite high readings here. They're about three or four times higher than we got on the mobile phone mast in the main beam of it and people are walking up and down here. They won't know it. I mean it could be because of that.. there's a little node up there on the top of the lamppost.

It's something that's made their MP worried. He was a biologist and cancer specialist for 40 years before entering politics, and feels his own party is now ignoring the advice they themselves commissioned.

How seriously do you think the government is taking the precautionary approach right now, with respect to wi-fi?

Dr IAN GIBSON MP Norwich North Oh, I don't think there's any doubt about it, they're not at all. wi-fi are just being rolled out as great big white heat of technology. Industry rules in this area and the precautionary principle and the safety of people who might benefit to some extent from the technology are completely dismissed. It's just it's Wild West country for the companies. They just put them where they want and say there's no evidence. Now, you know, five, ten years from now, as the evidence grows, there's enough now to be worried about it, but as the evidence grows, who knows

what it might show? It might show that it's completely unsafe for certain groups of people.

KENYON: But whilst the government races ahead, apparently unrestrained by its own chief adviser, others are more cautious. Switzerland, Italy, Russia, China, all had exposure limits, thousands of times below ours. In Salzburg the government advises against wi-fi in schools altogether, and there's something special happening in Sweden. We've flown in with our electro sensitive Sylvia. Our government doesn't acknowledge her condition, but here it's different. Deep in the Swedish woods the hideaway of another woman called Sylvia.

Hello.

SWEDISH SYLVIA: Hello, welcome.

KENYON: Can we come and have a look around?

She's an electro-sensitive too, and so are several of her friends. (to Silvia)
Can you feel anything here?

SILVIA: I don't feel anything here, all what I feel is just me. Here actually I could just think about the things... you know, just... it's just nice. You know, I feel free.

KENYON: So when did the authorities here start acknowledging the existence of this?

SWEDISH SYLVIA: They did so in 2003. Then they said this is an official disability.

KENYON: A disability?

SWEDISH SYLVIA: Yes.

KENYON: The Swedish government estimates that 3% of the population suffer this disability. Translate that to the UK and it's about 2 million people. Yet as far as our government is concerned, there are none. We set off for Stockholm and Swedish Sylvia's city centre flat. She's plotted a route to avoid all the masts. She wants to show us just how seriously her government takes her condition. Like the UK, this is a place where more and more people are acquiring wi-fi. But there's a key difference.

SWEDISH SYLVIA: Okay Silvia, this is my living room, and today the painter has been here and you see, he has started painting black.

KENYON: And this is anti-radiation paint.

SYLVIA: Yes.

KENYON: It's quite expensive.

SYLVIA: It's very expensive.

KENYON: Anti radiation paint, paid for by the local authority. It shields her from neighbours' wi-fi and from nearby phone masts. So the Swedes have the same scientific evidence but they recognise sufferers. In Swedish schools,

even if there's only one person apparently affected by wi-fi the system is removed and the classroom shielded. You'd think our government would base its decisions on the advice of their top man, the one it employed to protect our health, Sir William Stewart, but instead it seems to have turned to others. First the World Health Organisation. It's robust in its language saying there were no adverse health effects from low level long-term exposure.

Is that an accurate reflection of the science do you think?

STEWART: I think they are wrong.

KENYON: How are they wrong?

Sir WILLIAM STEWART Chairman, Health Protection Agency Because there is evidence, and the Stewart Report pointed out some of that evidence.

KENYON: So why do you think it is that the WHO, one of the most influential public health bodies in the world continues to put out that message?

STEWART: I think that they've got to review the statement that they're making.

KENYON: But in your view, not an accurate reflection of the science that's out there?

STEWART: I think it is not an accurate reflection.

KENYON: Then there's this. It's unlikely you'll have heard of ICNIRP but it's an international group of scientist which our government relies on to set our radiation limits. But here's the problem, it doesn't recognise any biological effects so it bases our exposure limits on a thermal effect. In other words, the radiation has to be so strong it heats up your organs before it's restricted. That's why our safety limits are so high.

How responsible do you think it is for governments to set limits for this form of radiation according only to a thermal effect?

Professor HENRY LAI University of Washington, Seattle Well I think it's irresponsible to just set standard using a thermal standard. If you just set it based on a thermal effect you're neglecting a large amount of data.

KENYON: Most countries, including the UK, set their radiation limits according to the ICNIRP guidelines. They can't be wrong, can they?

Professor OLLE JOHANSSON Karolinska Institute, Sweden Well hopefully not, because, as you say, governments and in that way whole countries, the entire populations rely upon them, and I do hope that they deliver the right and correct message.

However, I know also that they are heavily industry influenced and I mean their basic message is that if you are below a certain thermal level then it's alright. And...

KENYON: Are they right to set their guidelines only according to thermal effects?

JOHANSSON: Oh no, no, no, that's just rubbish I would say. You cannot put any emphasis on such guidelines.

KENYON: So why do we? I went to Rome to meet the man our government seems to favour over its own adviser Sir William Stewart. He's a scientist who's responsible for the WHO's position and who founded the standard setting body ICNIRP. He's a controversial character. Doctor Mike Repacholi no longer works for the WHO but he's made decisions which affect all our lives.

When you say on the WHO website: "There are no known adverse health effects" is that really giving people a complete picture of the science out there?

Dr MICHAEL REPACHOLI University of Rome When that statement was put on the website it was meaning that there's no health effects have been established, and when an effect has been established it means it's been repeated in a number of laboratories using very good study techniques.

KENYON: But Henry Lai will say that he's found them, Olle Johansson will say he's found them. I mean there are a number of highly esteemed scientists who'll say they have found them well beneath those levels. Are they wrong?

REPACHOLI: If they've published they are in the mix because every review panel looks at all the studies, along with other studies to see if they're comparable with those studies or point in the same direction, it's called a weight of evidence approach. And if that weight of evidence is not for their being an effect, or not being an effect, that's the only way you can tell whether there's really an adverse health effect.

KENYON: But here's the controversy. Doctor Repacholi used to work for the very industry which helps create this form of radiation. Before working for the WHO he'd been an expert witness for the phone industry, defending their right to site masts in controversial locations.

Are you truly independent do you think as a scientist?

REPACHOLI: Well I don't know how people perceive me. I perceive myself....

KENYON: You know. I think you do know how people perceive you.

REPACHOLI: (laughs) Alright, I do. I've seen the websites, and people can say what they like. I know what I am. I will only say what the science says, and that's.. to me that's an independent view. If people perceive it differently - so be it.

KENYON: You did, didn't you, work for industry before the WHO and ICNIRP.

REPACHOLI: I did.

KENYON: And you worked for them afterwards as well.

REPACHOLI: I did and I challenge anyone to say that I've charmed my mind because of my funder because I sure as hell haven't.

KENYON: So our government has a choice. Follow the recommendations of scientists like Dr Repacholi and the WHO, who effectively say: "Roll it out and don't stop unless someone proves there's a risk." Or follow their own adviser who says: "Hold on, don't rush ahead until we know for sure it's safe." Until that's resolved is it our kids who've become the test bed?

Would you allow your children to sit in front of a wi-fi enabled computer day in day out as they're going to school?

LAI: That's a tough question (laugh) I don't think so. I would limit the exposure to this type of radiation.

OBERFELD: I would recommend to parents to tell the school to remove wi-fi and otherwise I would change the school even.

KENYON: Really, you take it that seriously?

OBERFELD: Yes, very. KENYON: If you had kids who were at a school at the moment and there was wi-fi being rolled out, any concern at all?

REPACHOLI: None whatsoever. I'd make sure they had laptops and they could pick it up.

KENYON: What do you think the government should do now when it comes to schools and wi-fi?

GIBSON: I think they should stop and say we're going to do an inquiry into this. It'll take a year or two years and then we'll come back to it. I don't think the nation will grind to a halt if we did that. I think it would convince a lot of people that the government takes health and safety very seriously with new technologies.

KENYON: We asked the government for an interview about all this. It said no and referred us instead to the Health Protection Agency. The Chairman of that is.... hang on a minute - it's Sir William Stewart! The very man who has indicated to Panorama just how uncomfortable he feels about the speed with which wi-fi is being rolled out.

STEWART: I believe that there is a need for a review of the wi-fi and other areas.

KENYON: How important is it to do that swiftly?

STEWART: I think it's timely for it to be done now.

KENYON: If it's not?

STEWART: Who knows?

VINE: Paul Kenyon there and the UK has 3,000 wireless hotspots and 51,000 mobile phone masts and more and more are appearing every week. Next week it's "Married to the Mob" the Manchester woman convicted of helping to run her Sicilian husband's Mafia empire.