

# WiFi & Cell Phone Radiation - Problems & Solutions

## *Jini Patel Thompson Interviews Dr. Magda Havas, PhD*

Hi, this is Jini Patel Thompson from [www.ListenToYourGut.com](http://www.ListenToYourGut.com) and today I'm speaking with an expert on electromagnetic radiation and electromagnetic frequencies and everything connected with that. So Magda Havas is Associate Professor of Environmental & Resource Studies at Trent University. She teaches there and also does research on the biological effects of environmental contaminants. Dr. Havas received her PhD from the University of Toronto, completed postdoctoral research at Cornell University, and taught at the University of Toronto before going to join Trent University, which is also located in Canada. So Magda, thanks so much for being here today.

**Dr. Magda Havas:** My pleasure, Jini.

**Jini Patel Thompson:** Magda, the reason I invited you was that there are so many misconceptions and misinformation when it comes to what is called microwave radiation / radio frequencies. So we're talking about WiFi, wireless computers, cell phones, Nintendo's, Wii, all of these wireless devices. And so I thought I would like to do an interview with someone who *is* a scientific expert themselves, so that when we set the record straight, people know that actually this is a PhD who has done her course work and teaches in this capacity and so the information is a lot more trustworthy than someone like me who's just a layperson, who's done a lot of research and is quoting a lot of things secondhand.

So can we get going? I thought maybe we could start with some of these misperceptions because this is stuff I've seen presidents of telecommunication companies saying live on television. I've seen it in articles written for the BBC - which is supposed to be a super reliable news source. I've seen it in the comments that follow an article, people quoting this back and forth to each other saying, "Well, you don't need to worry because..." now here's the first one: "A year sitting in a classroom near a wireless network is roughly equivalent to 20 minutes on a mobile phone" (which is also a cellular phone). So can you...let's start with that one and here's the other one and this one is

straight from the BBC: "The health protection agency in the UK points out that a person sitting in a WiFi hotspot for a year would be exposed to only the same amount of radiation from a 20-minute cell phone call."

**Magda:** I've heard the same one, yes.

**Jini:** What do you have to say to that?

**Magda:** Well first of all, there are different types of WiFi radiation. Not all the radiation coming from routers is as high as it is in some environments. The wireless routers that we're putting into schools are some of the most powerful ones. They reach the greatest distances, so in most cases, they're more powerful than something you would have in your home, for example, where you might use it over a period of three or four rooms and it has to go through one or two walls. So the WiFi...the radiation from WiFi varies, depending on the type of system you have set up; whether it's an industrial grade system as it is in some schools, or whether it's a system for a small home. So that's one thing that we have to differentiate between.

The other thing is that when you have a wireless router, or WiFi, in a building or in a room, the highest levels of radiation are going to be right where the antenna is and the antenna is usually put slightly above head height, just below the ceiling on a wall. And so the people who are going to be closest to that will be the ones that are most exposed. And if you have a multi-story building, the person most exposed might be in a different room. They might be in a room immediately above where the antenna is. The other hotspot in a room is going to be very close to the antenna on your computer that you're using to communicate with the antenna in the room.

So you're within one or two feet at the most from that antenna and so every single time your computer is receiving information, it's downloading information or transmitting information, that's when you're going to have optimal exposure, maximum exposure. And if you have a classroom with 30+ students downloading and uploading information to the internet, that's when you're going to have very, very high levels and those levels - once again depending on the type of strength WiFi you have - can be extremely high.

Much higher than what you would be exposed to by simply holding a cell phone to your head for 20 minutes.

And you've got to remember that kids are in these classrooms for six hours a day, day in and day out. Whereas, you're using a cell phone for a few minutes a day, ideally, less than that, but just a few minutes a day. So it's very hard to compare the two of them, but my concern is primarily for the long-term, low-level exposure, rather than just a few minutes a day on a cell phone.

**Jini:** Right. And so can you clarify for me, because I know before I started doing my research-- because my children's school has wireless internet and I thought, okay, well as long as my kids are not working on the computer, they should be okay. And then I did some more research and I thought, well no they're not, because there are four routers throughout their school and they are on all day long. So my children are receiving radiation at varying levels throughout the entire day whether they are on a computer or not.

**Magda:** That's true. Now, I've never been able to measure the WiFi radiation in a school because schools won't allow me inside. We actually set up a meeting in a school in Toronto where one young girl became quite ill. She passed out when she was actually standing very close to an antenna. She didn't realize that and she simply collapsed in the hallway and she's done that a number of times now. The parents contacted me. I asked if I could go into the school to find out what the levels of radiation were and initially they said yes and then as they spoke amongst themselves, they said, "You know, we really don't want to know. We don't know want you in school to do the measurements." So I haven't been able...

**Jini:** Don't want to know.

**Magda:** They don't want to know. No, no because once they know...

**Jini:** Of course, they don't.

**Magda:** Exactly. They become liable once they know and so as long as you can act like an ostrich and keep your head in the sand, you can pretend that it's not there. And that's very irresponsible as far as I'm concerned, especially when we're dealing with the health of young people.

**Jini:** So let's move on to the next point. This is another thing that you'll see...I've seen again over and over from numerous sources: "FM radio and TV signals are similar in strength to that from WiFi in classrooms." All right? And then again from the BBC: "The modulated frequencies that carry Radio 4 and ITV into our homes are just as powerful as the wireless networks and a lot more pervasive."

I've got another, even more technical quote: "WiFi systems emit high frequency electromagnetic radiation but at very low power, approximately 0.1 watt emitted from both the computer and the router antenna compared to a cell phone that emits 1 to 3 watts."

"Cell phones are 10 times stronger than WiFi."

"Cell phones are 100 times stronger radiation than WiFi."

So we have like various quotes from people saying it's 10 times stronger, some people saying it's 100 times stronger, but they're basically comparing it to the AM/FM radio and TV signals.

**Magda:** Let's talk about AM/FM radio to begin with. Okay?

**Jini:** Okay.

**Magda:** We've had radio with us since the beginning of the 1900s with Marconi and Tesla. They're the two people who have been attributed to inventing the radio signal. So radio is not in the microwave range.

What we're talking about when we're dealing with WiFi, what we're talking about when we're dealing with cell phones, or cordless phones, is we're talking about microwave radiation that's very similar in frequency to your microwave oven. Indeed and I don't want to get too technical, but the frequency we use for a microwave oven is 2.4 GHz which is 2.4 billion cycles per second. So this is vibrating very, very quickly obviously.

The WiFi is also at 2.4 billion cycles per second and your cell phone is at 1.8 or 1.9 billion cycles per second. Whereas when we're talking about radio, we're talking about a frequency that's in the low megahertz range which is in the low million cycles per second. That's not microwave frequency. That's called radiowave frequency. That is not sufficiently strong to heat your body. The heating comes from microwave energy. That's why we use microwave ovens to heat our food. So that's the first distinction.

So we're talking about a different part of the electromagnetic spectrum that doesn't have the same amount of energy. The amount of energy in electromagnetic frequency is frequency specific, so the higher the frequency, the more energy, and if we go higher, higher and higher and higher, we reach something called ionizing radiation, like x-rays and gamma radiation - which everyone agrees is very harmful, not because it has a lot of energy...sorry, not because it has a lot of power. It's because it's very high frequency and it can ionize. It can penetrate your body and disrupt DNA. It can break bonds between cells.

So it's not the power that's critical; it's the frequency leading to the energy. So that's one distinction that needs to be made about this.

The other distinction that needs to be made is how things are modulated. So when we have an AM station; AM stands for amplitude modulation and what this means is that if you have a station let's say 1050 on the dial, that 1050 is the frequency that it's operating at. It's operating at 1.05 MHz, so that's the channel you tune to. When you hear the sound coming from it, that's called amplitude modulation. So things are going up and down, up and down in a nice little continuous wave. When you have FM, you're talking about frequency modulation. It's slightly higher frequency. Now, you're in the low

70 MHz range, for example, and you have little spikes that are coming out telling you what the sounds are that becomes modulated.

When you're talking about WiFi, you have digitally pulsed modulation. In all the research that I've been able to read recently, when you're looking at amplitude modulated - the AM radio station for example - and you're looking at pulsed modulation, the pulsed modulation is much, much more harmful; in any of the studies that I've been able to read from eastern block European countries where they've done a lot of this research. So we have WiFi that's pulsed modulated, which means that if you take a meter and you have a sound coming from it that's telling you whether you're exposed, it's going pap-pap-pap-pap-pap-pap-pap-pap. So you've got the 2.4 GHz that's carrying this and then you've got these pulses, roughly 100 times a second and that's what's causing some of the damage.

So you've got to take a look at things in total. You can't simply say this is a higher frequency or lower frequency, or this more power or less power. You've got to really take a look at the thing and put it together. The most harmful radiation that we have in the microwave band is 2.4 GHz. It's the one we use to heat food and initially, when these frequencies were used for different things, it was the most effective at heating, that's why we use it in the microwave oven.

It's also one that's not licensed, which means that you can have a microwave oven in your home and you don't need to have a license for it. Whereas, if you're a radio station or if you're a cell phone distributor, you have to get a license from the federal government to be able to operate at that frequency. So 2.4 is not licensed and that's why so many different devices are coming in at 2.4. They don't require a federal license to operate. Unfortunately, this is the one that heats your body the fastest. It's the one that's actually the most damaging in the studies that I've seen. So we're not doing really smart things with the way that we're using this technology and using 2.4 is probably about the worst thing we can do.

**Jini:** So are you saying that 2.4 GHz would be more damaging than say 6 or 5.6 GHz?

**Magda:** That's correct. That's correct. That's what the evidence is showing. There's one study I just read quite recently where they looked at four different frequencies and the two most harmful ones were 2.4 GHz and 900 MHz, which was what was used originally for the analog phones. So when we first had analog phones, that was a dangerous frequency and now the 2.4 which is just being...it's used for baby monitors, it's used for everything, because you don't require a license for that range.

**Jini:** And sorry, analog phones are what, cordless phones?

**Magda:** No. Analog phones are the... okay, the difference between analog and digital is the way the wave is propagated. One is a smooth continuous wave and the other is a pulsed wave. It's the pulsed that we're finding is actually more damaging. So we're moving more and more to pulsed frequencies and they are the ones that are most damaging biologically.

**Jini:** So the 900...did you say 900 GHz?

**Magda:** Megahertz, 900 MHz, so it's 0.9 GHz.

**Jini:** So were those like the original huge cell phones that came out?

**Magda:** That's right. The original ones were even at slight lower frequency than that, but yes, they're the ones that once they became quite popular, a lot of people had 800, 900 MHz phones, that were analog phones.

**Jini:** I'm going to kick in with some practical common sense objection right here. If 900 MHz and 2.4 GHz are the frequencies that they found to be the most damaging, I would say – okay, so let's look at all those Wall Street brokers who jumped on those, we used to call them weapon phones when they first came out.

**Magda:** That's right, yeah.

**Jini:** And they've had those pressed against their head hours and hours a day and it still takes them 10 years to develop a brain tumor. Then how-- this is what I'm hearing and I've got to admit in the back of my head this is playing: Okay, so if 10 years - pressed right against the head, hours and hours a day, it takes 10 years to develop a brain tumor, how worried do I need to be about WiFi coming in from the neighbor's house, or my kids sitting in a school that has WiFi? Like if I'm making sure that every other aspect of their life is healthy, what really is the risk?

**Magda:** Let me just correct you on one of the things you've just said. First of all, the studies that have been done looking at cell phones and brain tumors were not based on those early phones. They're based on much more recent technology, so that they're not necessarily on the 900 MHz, 4 watt phones and the people that...the studies that showed an increase in brain tumors and various types of tumors on the same side of the head: it was based on individuals who had half an hour exposure per week or more. So we're not talking about hours and hours and hours a day.

**Jini:** Right, right.

**Magda:** They're the ones who developed the brain tumors. Now, for a brain tumor to develop - the latency - the period between you having cancer cells in your brain and for those cancer cells to grow large enough for us to be able to detect them, or for doctors to be able to detect them, takes about 20 to 30 years. So the fact that we're finding them developing for people who use the cell phones within 10 years is very disturbing and that's for adults, it's not for kids.

One of the things that-- a study was done looking at tumors and it was done by Professor Lennart Hardell in Sweden who's one of the leading experts in this area globally and he compared people who were under the age of 21. They first started using them versus those who were over the age of 20. So those over the age 20, the increased risk of developing various types of tumors is roughly two-fold. So twice as many people developed them that should have developed them. For those who were under the age of 20, it was five-fold higher. So these people are...and we know that children are much more sensitive to this radiation.

Now, we have eight year olds who have a cell phone. I dread what is going to be coming out in the statistics. Looking at pediatric brain tumors, summing up, we're already documenting them and the numbers are increasing. Despite what national statistics are saying. I found a report that said that there was actually misinformation that wasn't put into national statistics reporting these cases. It was deliberately left out, or it was left out-- whether it was deliberate or accidental, I don't know. But it was left out of the national statistics, so it doesn't look as though anything is increasing. But you talk to pediatric surgeons around the world and they will tell you they're seeing younger and younger people coming in with brain tumors and more of them and this isn't just a handful of them around the world. It's quite a few who are saying the same thing.

So we're not comparing those old clunker phones that were very powerful with adults using them for hours each day. That's not the comparison. We're comparing people, adults who are using the normal type of technology we have - have had over the last 10 years - and they're exposed to them at least half an hour. That's how some of these studies were done, at least half an hour a week. That's nothing. That's our background now. That's the people who aren't exposed.

**Jini:** Yes, exactly.

**Magda:** So it's not a fair comparison in that regard. We know that children are very sensitive and once again what the research is showing is that you can have...you can compare the effects of short-term high exposure, to long-term low exposure, and you get the same results. So having children sitting in a classroom for six hours a day, using their computer for a part of that time means that their bodies are constantly exposed – and it varies somewhat with intensity depending on how many kids in the class are using it – to microwave radiation. These same kids then go home and they have wireless routers in the home and so they're exposed to that radiation. Most people will not turn their wireless routers off at nighttime, so they're exposed in the middle of the night. Their little bodies don't get out of this radiation at all. They're constantly exposed. They have no ability to repair the damage of what this radiation is doing.

And so they become ill and the illness is not necessarily a cancer. It's a headache. It's feeling achy. It's not getting a good night's sleep. It's being exhausted. It's not being able to concentrate in school. And then some percentage of these kids are developing heart arrhythmia and heart palpitations, because your heart is an electromagnetic organ. We know it affects the brain cells and your ability to think, because of brain wave activity in children, and the effects last well after the exposure is stopped. But for these kids the exposure never stops, they're just constantly exposed.

**Jini:** Right. That's-- what you've raised is what I find a very interesting point, because the common perception is look, if this radiation was so damaging, more people would be affected. But look around, everybody is fine. And then you say, well, here's what you actually need to look for. Right? You start going through the list and nobody is connecting the dots between the worsening health of their children and of themselves. Like they're saying, "Oh, my hormones are unbalanced and I need to take more and more supplements to not feel so-- I'm really fatigued." Nobody is connecting the dots between...well, *why* are we having all of these "small symptoms" ongoing all the time? Why is nobody saying, "No, I'm really healthy. I feel really good everyday."

**Magda:** That's right. Now, if you look at the amount of medication sold, a lot of the medication is sold for depression, which is one of the symptoms, for insomnia, which is one of the symptoms, and for pain, which is one of the symptoms. And we've done studies in schools and we think that probably a third of the population is affected by this form of energy and they're just chronically ill, or they're just not really healthy. They're not very vibrant.

And many of these people will tell you, "Well, I lead a stressful lifestyle. That's why I feel this way, or, I'm getting old that's why I feel this way." But they go away somewhere into a clean environment, we're not talking necessarily about going on a vacation and not having any work to do, because that's not a fair comparison. But they go into a clean environment. They visit a friend. They stay for a weekend or something and they sleep well. They wake up and they're not tired in the morning and funnily enough, their lower back doesn't hurt for some reason - and a lot of this can be attributed to their exposure to electromagnetic energy in their normal environment.

**Jini:** Or higher levels. Because now, what I'm saying is: How do you get a clean environment? Because for our family, we're aware of this. I don't even own a cell phone. My husband after continual badgering - getting barraged by all the research from me - has now reduced his cell phone usage to probably less than 10 minutes a month. I don't allow my kids to have cell phones. They have a Nintendo, but I don't allow them to play it wireless. We, of course, have cable computers; however, a thousand meters away is a power line and sitting on top of it are four cell phone towers and then our next-door neighbors have wireless and I had someone come here to test, and their wireless is coming into our house. It's coming into our bedrooms. So now I'm starting feel...we've lost our choice. I'm trying to say, okay, so if my kids are radiated at school and I can't really get the gumption to pull them out at this point, but at least I can keep things clean at home and that's even been taken away from me. So now I'm thinking well, now what do we do?

**Magda:** Right. Well, I think there's going to be some class action lawsuits coming up fairly soon because more and more people are getting sick because of the wireless technology that their neighbor has and it's coming into their homes.

Also, they're putting Smart Meters on homes in Canada in a number of different provinces and Smart Meters use microwave energy as well, and in some American states as well. I know people who've been contacting me who have a Smart Meters on their home and some of them are sensitive, and so they're reacting to this. And what we're doing is recommending ways that they can shield their internal environment, not the Smart Meter, because that has to communicate, but where they can begin to shield their internal environment. And some people are actually refusing Smart Meters because of the exposure and their ill health. But also there's evidence that they're not reading correctly. They're giving you much higher readings than what electricity you're using, and some of them have been improperly installed and they've had fires with them as well. So there's all sorts of reasons why you shouldn't be using Smart Meters on the homes.

**Jini:** So let's get into some practicalities. In your opinion, because you're on top of all of the research across the board and you're seeing the real life susceptibilities. Some

people are susceptible, some people are sensitive, some people are not. If I have a child in a school that has wireless computers, but my child is showing no overt signs of hypersensitivity, maybe the child gets a nosebleed, maybe they get a skin rash from time to time, but there's nothing that can be tagged unequivocally to wireless exposure, what should I do?

**Magda:** I'm not in a position to tell parents what they should do, because I feel really-- when you make choices like that, it's based on more than just the science. It's based on your value system. It's based on how much money you have, whether you can afford to put your kid in a school-- very often, you might have to pay more to put them in a school that doesn't have wireless. If you have to bus them further away or things like that. So I really feel that the decision the parents end up making, has to weigh all of that and balance all of that.

As a grandmother, I don't want my grandkids in a school with wireless technology. I simply don't want that and I know that some parents feel the same way. They've offered to purchase cable for schools so that they don't have to go wireless. And some schools are actually putting wireless in where the cable already exists. So, they're having a redundant system because they think it'll be better, it's more modern, it's more progressive. And actually, it's a worse system from various perspectives, including security, for example. It's much easier to tap into your computer in a wireless mode than if you have cable, for example. And it's not as fast either.

So if you have 30 kids in the classroom downloading information at the same time, it's going to be very slow. So, you're not even dealing with the best technology. It's the cheapest technology and that's why this choice is being made. It's convenient and it's cheap - in the short-term. It's going to be extremely expensive in the long-term.

My recommendation is for the schools to either go wired, if possible. If they've already gone wireless, to limit the exposure to just part of the school so that you might have a computer lab that's wireless and you go into the room, get the information on your computer that you need and then you go back to your seat and you're not in a wireless environment. Doing it that way, turning it off when no one's using it. Allowing wireless-

free areas in the school I think is extremely important, and then any parent who wants their child not to be exposed, they should have that choice.

You don't want your child to be exposed to cigarette smoke and so we ban smoking on school property. When I was a kid, kids could smoke in the schoolyard, but we banned that. We don't allow peanuts in schools because a very few number of children have peanut allergies and so we have to be very conscious of it.

**Jini:** That's actually a very good comparison, because that's another argument that you hear. You say, well listen there's such a low percentage who are sensitive, why should the rest of us suffer? But yeah, hello, peanut allergies.

**Magda:** That's right.

**Jini:** That is a prime example. There's so few children allergic to peanuts, but nobody is allowed to bring anything containing-- and in some schools they've banned all nuts.

**Magda:** That's right. That's right. They protect a very--

**Jini:** Which is for me is very inconvenient.

**Magda:** Exactly, yes, exactly. But you're willing to do it because someone else's child, their life might depend on it. So you're willing to do it. Also, when parents are, when your child goes on a school trip somewhere, a form comes home asking you if you give them permission to leave the school property on this trip. Well, you should be asked - for all sorts of safety reasons - you should be asked the same thing: Do you allow permission for your child to use a wireless computer? And if your answer is no, then the school should, in my mind, make alternative arrangements for that to happen. I actually think that, just like asbestos, we're going to be ripping out wireless technology from schools within the next 5 to 10 years, because so many kids are going to start getting ill. If they're using the high exposures like what they're using in some of the schools here in Ontario, because they have industrial strength WiFi monitors, WiFi connections.

**Jini:** Really, there's no way for us to go into our schools and find out what they have, but would you say that if a school, if the whole school is wireless, it's going to be at industrial strength?

**Magda:** Probably yeah. It's the best system for the school in terms of connectivity. So you're not going to have any, you're going to have no areas where you can't use the technology and it's the IT, it's the IT people that are pushing this because they want to make sure that you've got all the convenience of using your computer, while in you're in the toilet, in the washroom, if you want to. And I don't think that's necessary and certainly kids under the age of about 10, I don't think they need to use wireless technology. I think there's a lot of ways of teaching them without having that wireless connection in elementary school, for example.

**Jini:** Well and if you look at the Waldorf School system - which I think is one of the best in the world - they don't even allow their children, these kids, on the computers until grade 12 because they say - and they have plenty of studies and information to back this up - that it's...not only is it not needed, but it interferes with other vital brain development processes.

**Magda:** That's right and there's some evidence of its being addictive as well. I mean not only to kids, but to adults. There are people who can't leave their home without their cell phone and they have to check it constantly. And you're having lunch or dinner with someone and they're constantly pulling out their phone to see if they've gotten any messages. And to me, this is really sick behavior, it's not normal behavior. Not one of us, except perhaps if you're delivering babies and you need to find out if you have to rush in for a surgery, do you need to have that kind of connectivity and I think it's just an addictive behavior that we're beginning to experience.

**Jini:** So, if it was your child in a school-- and there are no wireless schools around us anymore. So, it's not like I could say, "Well, I'm going to put my child, pull my child out of that and put them into this school. There is nothing left, that's not wireless."

**Magda:** Because you're no longer able to have a choice, that's right.

**Jini:** Yeah, there's no choice. Would you then say, I'm not asking about your recommendation, I'm asking about you, it's your child, would you say, "Well, I'll home school then"?

**Magda:** Well, that's what a lot of people are doing is they're going to home schools. Being in this field as a grandmother, I would like to be able to go into a school and actually measure the radiation and if the levels are sufficiently low, I might not be too concerned, but if they're high, I would yank my grandkid out of there as fast as you could-

**Jini:** So what would be a sufficiently low level?

**Magda:** Well, if it's below the 0.1 microwatt/cm<sup>2</sup> I probably wouldn't be too concerned. If it's anywhere above that, the higher it is, the more concerned I would become. Now that's well below our safety code guidelines.

**Jini:** I was going to say that 0.1 microwatt/cm<sup>2</sup>, isn't that the safety maximum in most of Europe?

**Magda:** No, just a few countries in Europe have adopted it so far.

**Jini:** Just a few countries.

**Magda:** Yes, but more and more I think are considering it and that's for outdoor exposure. For indoor exposure, it's 0.01 and I know people who are electrically sensitive still react to the 0.1. We did a study just last-- a few years ago, it's just coming out this year, where we tested the response of the heart to microwave radiation and the arc exposure was 0.3, so it's 3 times higher than that guideline that I just mentioned - and several of the people we tested blindly, so it wasn't a psycho-somatic response, they developed tachycardia which is a rapid heart rate and arrhythmia instantly as soon as we exposed them to the radiation from a cordless phone at 2.4 GHz. So, if adults start having those symptoms and I know quite a few adults who have them, they suddenly feel; their heart starts beating, they have this pressure and pain in the chest area, they're

having an anxiety attack, that's how they interpret it, or they're having a heart attack and they don't know which and it scares them incredibly. Well, children are now beginning to have these problems.

In the Simcoe County School board, I think there are two children now who are on heart medication because their heart reacts abnormally in the school environment, they're fine on the weekends, they're fine at home, any other time, but when they go to school, their heart reacts and I think it's quite likely that both of them might be reacting to the microwave radiation. We've contacted the school and asked them if they would just turn it off, or turn it down, so the levels are not as high. Or even do an experiment where they turn it off for a week to see if these children are having the same symptoms. It's more than two that are having the symptoms. It's just two have been...are now on heart medication and I think that would really begin to help us understand whether it is WiFi, or whether it's something totally different.

**Jini:** And now you said that, okay, so what you would consider an okay level: For school exposure it would be below 0.1 milliwatts/cm<sup>2</sup> and just for comparison...

**Magda:** Microwatts/cm<sup>2</sup>.

**Jini:** I'm sorry yeah, microwatts/cm<sup>2</sup>, can you tell us for comparison, what is the current Health Canada Safety Code 6 level that they say is okay?

**Magda:** One thousand.

**Jini:** One thousand!

**Magda:** Yes.

**Jini:** And that really is the problem because I've talked to the principal, I have talked to the school board, they all say to me: "This is not my area, I just follow the directions from Health Canada Safety Code 6" and it all...everybody refers you back to there, "I'm powerless, there's nothing I can do, Health Canada Safety Code 6." And you look at

Health Canada Safety Code 6, it's 1,000 versus 0.1 which is what it is in Europe and they have looked at the same research.

**Magda:** That's right and the guideline in Russia is 10. So even the Russian guideline is much lower, it's 1% of our guideline and they limit exposure, they say the higher the levels are, the less you can be exposed in that environment. So Canada's guideline is based entirely on heating.

A long time ago, scientists made the assumption and it was an assumption, they did-- they were guessing, this technology was invented, and they had no idea what the health effects of it might be and so they tried to get as much information together. But they said, look we know microwaves heat, because the guys who worked on radar are getting warm. We know we can use it in industrial sealers because it's a good way to heat plastic and to heat water and that kind of thing. So we know it heats. So as long as we can prevent it from heating your body, it's safe.

Well, that's nonsense. We have now thousands and thousands and thousands of scientific documents, peer-reviewed published documents that are saying there are all sorts of health effects below the heating. And they affect your nervous system, they affect the blood-brain barrier, they affect enzymes in your body, they affect calcium movement, they affect reproduction. I mean, I can go on...they affect your sperm. I can go on and on and on and on.

And for some reason Health Canada has decided to ignore this information. And so they're saying: If it doesn't heat your body it's not harming you. And that's wrong. That's simply wrong. Now, it's not for a school board to decide what is safe and what isn't, so they're basically saying - and this is correct for them to do so - that we're going to look to the highest health authority in Canada which is Health Canada. So it's really Health Canada that is letting all of us down by not adjusting their guidelines based on the science that has been available, by the way, since the 1950s and 60s. So this has been available for decades and they simply choose to ignore it.

**Jini:** So then you have to say, "Follow the money."

**Magda:** Oh, definitely, follow the money.

**Jini:** Because normally when governments ignore scientific evidence that is this strong and this prolific, it's because somebody is paying them to look the other way because they're benefiting.

**Magda:** That's right, but what that really means is that we have to take responsibility into our own hands. If your daughter is passing out every time she goes near a wireless router, in the school environment and the school tells you it's perfectly safe, you know you can sort of look at your daughter and say: Okay is she...doing this on purpose, is she play-acting? And if she isn't play-acting, then it's not safe. You have to really use your own judgment on this because you can't rely on Health Canada or the guidelines on this.

And so I'm basically telling people: Be aware of what's in your environment, have it measured. Measure it yourself. Whatever you're comfortable with. Some of the equipment is not very expensive, but you can have it done professionally. Find out what you're exposed to, find out how you can minimize your exposure. You don't have to eliminate it, just cut it back as much as you possibly can and still use the technologies that you need to rely on.

And then monitor your health and see if your health improves as you begin to cut back. And if you're electrically sensitive, there's all sort of things you can do. You have to cut back on your exposure then. You have no choice because you will become sick and you will become sicker as time goes on. You have to build up your immune system and you have to detoxify your body and get rid of all the other toxins that are making you—you know, increasing your sensitivity to the electromagnetic frequencies. And once you do all of that, a lot of people have been recovering, they are recovering from this exposure.

**Jini:** But see, I hear, I hear a huge contradiction in that, because on the one hand I'm hearing, and I'm not attacking you, I want you to point this out to me.

**Magda:** No, that's okay. I'm used to being attacked, by the way. So it's okay.

**Jini:** But I don't want to join that camp. On the one hand, I'm hearing this technology is dangerous because it causes things that even aren't immediately evident, like DNA breaks and enzymes and sperm count and then the hormonal balance and stuff like that. So on the one hand, we're saying: This technology is dangerous.

Then on the other hand, we're saying, well you don't have to completely get rid of it, just cut it back to what you need and see if your health improves. And so I'm kind of left going, well... either it is, or it isn't? It's not like-- and I know okay, so let's take the smoking analogy.

You could say, look we have decided as of, as a culture or country, that cigarette smoke is carcinogenic; it's dangerous to your health. Yet at the same time we acknowledge that not everybody that smokes gets cancer, not everybody that lives in a second-hand smoke environment gets cancer. So are you saying it's similar to that type of thing, where there is always going to be the exception to the rule, but for the majority of people, we can say that this is bad for your health, you should basically get rid of it as to whatever limit is within your power?

**Magda:** Okay, it is similar to smoking and you're correct when you say that some of the damage you can't see. If it's damaging your DNA that might show up 10 to 15 years down the road. So, you're correct about that. What I was referring to are people who are symptomatic. Which means, they go into a room, there's a cordless phone there, and they develop a headache within a matter of a few minutes. They don't have a choice. They can't be in that room without having a headache and the headache could be very severe. It could be totally debilitating.

Their choice is taken away from them as to whether or not they can be exposed to this radiation. However, if those individuals who react very strongly and have these symptoms, if they eliminate the exposure, or minimize it as much as they possibly can and then begin to build up their immune system and begin to detoxify, eventually they'll be able to go into that room with that cordless phone there and they'll be able to be in there for a couple of hours without developing a headache - rather than developing it right away.

Do you see what I'm saying? So your symptoms will actually go away because your body is able to fight it better. When you're totally depleted of everything, a little flu comes along and instead of you staying in bed for a week, you're in bed, you're sick for months. Your body can't fight it and so what we're finding is that your body can eventually fight it if you build up your immune system and minimize your exposure.

**Jini:** Okay, so then bringing it back to the practical. I'm a natural health writer, my kids have been fed organic unprocessed food from birth, probiotics, vitamin D, you name it, they've had it, fish oils, everything. You can't find, you'd be hard pressed to find healthier kids. They are extremely physically active, completely developed musculature, very high cardio. So I'm looking at them and I'm going – so from birth, they've had everything that you're supposed to do, like their immune systems; they have not been vaccinated, they are operating at the highest level of health that is probably possible within a modernized world.

Do I need to be worried about them being in a school with WiFi? Or do I say, well because I'm doing all of this on the back end, they will be okay because their bodies will be able to repair the damage, their bodies have good detoxification systems. Or should I still be going: But that is an added stressor, I don't know the consequences, I should take them out?

**Magda:** Okay, I would agree that your children are probably able to withstand the stress without having damage to their system, compared with some child who is brought up on junk food, doesn't get a good night's sleep, doesn't exercise, sits in front of the boob-tube (TV) all the time. I would hazard to guess that your kids would probably be in a much better condition to withstand the stress, or tolerate the stress; however, we don't know what the long-term consequences are.

WiFi exposure to, or microwave exposure, of young children has just started in this generation. When I was young, I wasn't exposed and one of the things I was told is that this generation might be the first where the parents outlive the kids, because of all the toxins we have in the environment, including the microwave radiation. And that's a very disturbing concept.

Since we don't know what the long-term consequences of even the slow level exposure is, I think I would prefer to err on the side of caution. If I were a school principal, I wouldn't tolerate this, even if Health Canada said it was safe. If I thought the kids would be harmed by this, I simply wouldn't tolerate it in my school environment. And I just wish more principals and school superintendents had that perspective, rather than blindly believing in authority figures like Health Canada.

**Jini:** But they're saying they don't, they're saying they don't have the power.

**Magda:** Oh, they do. As a matter of fact, in Ontario quite recently, there's been a lot of news on this recently in Ontario and one of the things the Board of Education said is it's up to the individual schools to decide how they want to go. So basically, they're passing the buck. They're saying we're not going to make the decision for you. You decide. And that's what I find. Everyone is passing the buck. And at some stage, you've got to say: The buck stops here and I'm going to take this into-- I'm going to take responsibility for the lives and the health of my children, or the children in my school, or the children in this community. And then you do what you believe is right in order to live up to that.

**Jini:** Well, and so let's move on to another aspect of this whole occurrence and let's get away from wireless computers. Let's talk about cell phones, because our school has a policy. It's an elementary school; it has a policy that no cell phones are to be turned on in the school or on the school grounds, at any time. So that's a policy, now *enforcing* that policy is an entirely different thing. And I've said to the principal, listen these are children, they are texting each other underneath their desks.

**Magda:** That's right.

**Jini:** They are-- as soon as it's recess, they go outside-- because my kids are telling me: "Look, so-and-so has their cell phone on in their pocket all day and he's sitting two desks away from me." So the principal said, "Well if you come and tell me, I will take the phone away from that child for the day and I will explain to that child." Okay, great.

But you know what else the principal said, "On the other hand," she said, "I have parents like you coming in - and your position is that cell phones and wireless computers are dangerous and you want them out of the school." She said, "I have a whole other set of parents coming in to me saying, "Why are you making my child turn off their cell phone? My child should be accessible to me all day long, I want my child's cell phone left on, so that I can text or I can reach him when I need to."

**Magda:** But why would they need to reach them during class?

**Jini:** Well, because they're all psycho about this. They've all gone nuts over this technology. Like you said, that you go out for dinner and they're checking it every half an hour. People have gone a bit crazy. So... but I found it interesting, seeing it from her perspective that she is being like whammed from both sides because she's got one set of parents saying this and she's got another set of parents saying that and I've seen-- even when I've tried to share the information with other parents, I've got--

**Magda:** They don't want to know...

**Jini:** Oh no, they are like, "You should not be doing this, take me off the list-- you're abusing the list" and then making jokes, "Oh look, I've got my cell phone, am I going to get a brain tumor?" You know, ha ha. You know, so it's, the resistance is quite entrenched from all sides.

**Magda:** It is, yeah.

**Jini:** But now let me ask you another scenario... because all right so, I got a neighbor: She's got cordless phones that she's on a lot, she's got two computers that are both wireless and the adults are on one and the children are on the other. The children have Nintendo's that they play wireless because they play each other and her kids are all under the age of 8. She's got three kids under the age of 8.

Now, she's looking at her family going, look if this technology is so dangerous, somebody would be showing some signs of something. And I'm saying well, maybe you

don't know what signs to look for. So, based on what you know with that kind of-- oh and her house is also is a thousand meters away from a power line, a huge power line with cell phone towers sitting on top of it. So she does have the other exposure coming into her house as well. What should she look for in her kids, as a checklist, to go, are they doing this, are they exhibiting this, so that maybe what she perceives as her children 'not being affected'-- affected by this, maybe they actually are. What would you tell her to look for?

**Magda:** Well, the symptoms of electrical sensitivity are quite long but I'll list the most common ones. They include difficulty sleeping, so not having a restful sleep at night, waking up in the morning tired, feeling fairly tired during the day. Some people call it chronic fatigue in both of these symptoms, having body aches and pains, which seems to be more of a problem in adults rather than children. But children do get headaches - and that's very uncommon for kids to develop headaches. Difficulty concentrating, problems with poor short-term memory, difficulty focusing on anything, having mood disorders, either depression, anxiety, irritability. Skin problems is another one that comes up quite regularly where you just develop a rash or something on your skin that might go away, might stay but...

**Jini:** Does it look like eczema?

**Magda:** It could look like eczema. Actually, eczema can be exacerbated by this and it can clear up when you're no longer exposed. We've had one individual whose health, whose eczema virtually went away when they stopped their exposure, but I don't know if that'll happen for everyone. So skin problems is another one. Nausea, some dizziness, in severe cases, vertigo. Nightly urinations; we find that adults have to go more regularly at night and children might bed-wet when they're exposed to this radiation whereas they don't do it when they're not exposed. Nosebleeds actually is one of the symptoms in some cases. So there are really quite a few—oh, ringing in the ears, difficulty with vision, that's sporadic, it changes; your vision goes bad and then it improves again. These are the--

**Jini:** Any digestive or bowel irregularity?

**Magda:** I don't know about things like constipation or diarrhea, but nausea is one of the problems and very often, individuals who are sensitive, they just don't have an appetite. They just don't want to eat because they're feeling kind of nauseous.

**Jini:** Got you.

**Magda:** So once again, these could be brought on by a lot of things, so it's not just this...but if kids have those symptoms, I'd be very concerned about that. And just by--

**Jini:** And like you said, like you said, these things can be brought on by a lot of things and so the way to test would be switch to wired computers, get rid of the cordless phone in the house and even just reducing that amount of exposure and get them not to play their Nintendo's on wireless mode anymore.

**Magda:** That's right.

**Jini:** If they play their Nintendo's just regularly, is that okay?

**Magda:** Well...oh yes, yeah, that should be fine as long as it's wired, it shouldn't be a problem.

**Jini:** And what about a Wii?

**Magda:** I haven't ever measured a Wii, so I don't want to have to guess on that but that's obviously something I should do, because kids are exposed to that.

**Jini:** Well, and there's more and more toys coming out that have a wireless component.

**Magda:** Yeah, and I don't buy any of those for my grandkids at all, because I just don't want them exposed. As much fun as they are to play with, they can find something else that's not exposing them.

Though there are things you can do if you happen to live near someone who has this technology. There's film you can put on your windows. It blocks some of the radiation coming in. So if you happen to live near a cell phone tower, for example and you can't move for whatever reason, and you just want to minimize your exposure, you can put a special film on your windows that will reflect anywhere from 80 to 90 percent of the radiation back out. There's fabric you can put on your windows as curtains. It allows a little bit of the light in and keeps the radiation out. Extremely sensitive people take this fabric and make a canopy around their bed, so that during the night, they're sleeping in a very, very clean environment and that allows their body to recover and so during the day, they can tolerate it somewhat better as a result.

Some people wear clothing that has silver fabric, silver fiber mesh and that reflects the radiation. Some electrically sensitive people swear by it and others can't use it; it irritates them, so it's a very individual thing to whether or not it actually helps you, or it has no effect, or makes it worse. But we've measured the radiation blockage and it's considerable with these materials.

**Jini:** Do you think because I know, I thought: "Oh good, well, I'll just get my kids-- I'll make them some clothing out of this radiation blocking fabric and then they'll be fine in school." And then someone said no, don't do that, because of the silver in the fabric, it then becomes highly conductive. So if you're looking at a high electrical environment like a school, you may be blocking the radiation but now you're probably conducting...

**Magda:** That you're bringing the electricity, that's right.

**Jini:** Which is...you're sort of twelve or a dozen, you've changed one for something that can be equally bad so then I'm like, well now what do I do?

**Magda:** Yeah. But some people who are very sensitive, they will wear something over their clothing when they travel, so they're not exposed as much and they do claim that they feel much better as a result. So as I said, it has to be an individual thing as to whether or not you feel better. And once your body becomes that sensitized, it will tell you whether or not it's a good thing for your body to have, or not.

Most of us are so out of tune with our bodies that we just don't...we have tension and pain and we're not even aware of it. But electrically sensitive people don't have that luxury and they're very sensitive and can tell whether or not something is good for them, or is harming them.

**Jini:** So by the same token, then we're back to that same dilemma of okay well, it makes me feel better, so now I can continue to go to school, but we don't know what the long-term consequences...

**Magda:** What the long-term is, correct. That's correct.

**Jini:** ...of the biological processes being disrupted in the body are going to be. So in a way, I'm almost thinking that it's half a solution, but if it means that in 5 or 10 years, your child is going to have cancer or leukemia, well what's the point?

**Magda:** Yes.

**Jini:** It's like...I mean, I think as people become more and more educated-- I mean my own children - because they read my blog posts and we discuss things - my eldest son who's 10, he got to the point where he said, "You know what? I'm not going to school." And my husband of course had a fit, "He's just using this as an excuse to stay home from school!" And I said, well, you know what, he actually is very cognizant of the facts.

And so I said, "Okay well, if you're going to stay home from school, why don't you do a report on this technology and on the dangers of it especially pertaining to children?" So the week that he stayed home, that's what he did and then we actually turned that into a website: [www.RadiationEducation.com](http://www.RadiationEducation.com) Because the kids are now starting to say, "Well meanwhile, everybody's telling us that it's safe, but we're the ones who are there getting radiated every day, while mom and dad stay home in a low radiation environment."

**Magda:** Right.

**Jini:** And so, it's just...you start to go, I'm living in a surreal world here, because I'm sending my kids-- like if you said to me, would you work in an office that has WiFi, I would say "No way." But yet, I'm sending my kids to a school that has wireless because I'm feeling so trapped. I've got opposition from my husband who says, "Look, it's not...they are going to be okay. They're strong. Look at them, they're fine." Do you know what I mean? There's so much, it's almost like the vaccination issue when it first came out and you're like, you're the only one saying the world is round and everybody else is saying it's flat.

**Magda:** It's very similar to that, yeah. And the fact that 90 percent of the population thinks the world is flat doesn't make it flat.

**Jini:** Exactly.

**Magda:** So it's not a popularity contest as to whether the information is correct or not. Someone's correct. We don't know who, but we will in a few years' time.

**Jini:** Well and also, then you have to look at the existing cancer rates. I know they're one in three.

**Magda:** Oh, it's horrible!

**Jini:** I mean, come on, obviously there's something very wrong with what we're doing on a daily basis to have cancer rates that are that high.

**Magda:** That's right. Actually, Dr. Sam Milham just wrote a book called *Dirty Electricity* and he believes that cancer, heart disease, depression, diabetes are all diseases of our 21<sup>st</sup> century diseases and he's linked every single one of them to electromagnetic exposure, in studies that have been done.

**Jini:** And he's not just talking about this microwave radiation. He's talking about power lines, dirty electricity and things like that, right?

**Magda:** That's right. He's talking about the whole kit and caboodle, yeah.

**Jini:** Because that's another argument you see on Internet sites where people are-- say there's a news story and then people post their comments. They're like, "You know, these are the same Luddites, I remember this whole thing erupted with electricity and then people were going crazy over power lines. And look, it's all fine! Nothing ever happened with that." And I'm saying everybody is so misinformed.

**Magda:** Well actually, quite a bit happened. We now have low frequency magnetic fields classified as a class 2B carcinogen, which means possibly carcinogenic, and that was based on childhood leukemia studies, so something did come out of that. And we know it's occupationally related to various types of cancers from breast cancer to brain tumors and to leukemia, in workers who are exposed to high levels of magnetic fields in their jobs.

**Jini:** Let's talk about some of those...because when I looked at the cancer cluster studies near cell towers; they always talk about 'we've got cancer clusters *near* cell towers' but it's rare that they define what that distance is. So then I found a study, it's called the Niala Study: "Concluded that the risk of newly developing cancer was three times higher among those patients who had lived during the past 10 years within a distance of 400 meters from a cellular transmitter, in comparison to those that had lived far away." Well, what's far away? This is the other thing that's driving me nuts. Can you give me some clear-- what's the distance, what's the minimum distance you should be from a cell tower?

**Magda:** Well most of the studies are showing 300 to 400 meters, that's what they're documenting for cancers and for symptoms of electro-sensitivity. So I think that's probably fairly good. If you want to be on the safe side, probably 500 meters would be the best estimate? But beyond that...

**Jini:** Five hundred meters from a cell tower.

**Magda:** Five hundred meters from a cell tower, that's right. When it comes to broadcast towers like radio and television, remember we talked about them right at the beginning? And we know that they're not at microwave frequencies, they're at lower frequencies, but they're more powerful, and so the distance from those is anywhere from 2 to 4 kilometers. So if you're near a broadcast antennae for a TV station or a radio station, then ideally you should be between...you should be at least 4 kilometers away. That's what the studies are showing, because of the incidence of the cancer.

**Jini:** And when you say - and we discussed the difference between the frequencies - when you say they're more powerful, are you talking about voltage?

**Magda:** No, I'm talking about wattage.

**Jini:** The wattage, okay.

**Magda:** The power that they have. The more powerful they are, the greater area they can reach.

**Jini:** Oh okay.

**Magda:** Right? So you have some radio stations that can do...they spread out from Ontario to the United States and then some are local. They service a community, so they don't have the same amount of power, the wattage, for their station.

**Jini:** And then how about power lines, like the great big ones?

**Magda:** Yeah, there we're concerned primarily about the voltage, as they're called high voltage transmission lines. So the higher the voltage, the higher the electric field. And the more current they carry, the thicker the wires, or the more wires there are, the higher the magnetic field. So it's those two things that we're most concerned about.

**Jini:** And so what would be the safe distance that you would need to be away from those?

**Magda:** For them, I'm trying to remember, it depends...you know, it's interesting, those people think the high voltage transmission lines are the ones we should avoid, but the ones on your street have very high magnetic fields sometimes. So their voltages-- their electric field is low, but their magnetic field is high. And if you're on a street and you're 20, 30 meters away, you're probably being exposed to an elevated magnetic field. And that comes into your homes, unlike the electric field that doesn't - it's blocked by the bricks and mortar and windows and everything else.

**Jini:** Okay, I didn't know that.

**Magda:** Yeah, so the electric field is just outside, but the magnetic field penetrates, and I'm trying to think... I think it's about a hundred meters, at least a hundred meters away. You'd get close very close to background levels.

**Jini:** From the big power lines?

**Magda:** Yeah.

**Jini:** Or the street?

**Magda:** From the big power lines.

**Jini:** Oh okay, so the big power lines are a lot less dangerous than I thought they were.

**Magda:** It's the electric field that's a problem with them, so if you're outside, you're going to be exposed to very high electric fields. As a matter of fact, some of these lines will light up a fluorescent tube. There's enough electricity to excite the molecules in a fluorescent tube and you can...

**Jini:** You can stand there with a fluorescent tube and it's like...

**Magda:** Oh yeah, you hold up a tube and it'll light up.

**Jini:** Oh my lord, well that's a good test.

**Magda:** Yeah.

**Jini:** That's an easy test because around here, a lot of these people, they've got them in their fields and their house is sitting underneath and their cows are in the field nearby.

**Magda:** Yeah, cows tend to abort when they're near power lines, or they don't take, they have real problems with reproduction. Some of them have...

**Jini:** Well, don't all these different sources of both electric and magnetic radiation, don't they really depress milk production in cows as well?

**Magda:** Yes, they do.

**Jini:** And they cause egg embryos to mutate and they're causing all kinds of damage to the animals, aren't they?

**Magda:** They are and the vets are telling me that more and more animals are coming down with cancer in cities, compared to countries where you're closer to the power lines then you would be out in the country environment. So there's an increased incidence of cancer in pets that live near the power lines.

**Jini:** So that brings me to another question. So from an electromagnetic perspective, is it going to be safer to live in a city where let's say, you're the safe-- the distances we just talked about - from the cell tower, from the radio or TV, from the power lines - you're a safe distance away from all those sources, or, in the country, but let's say you've got a humongous cell tower out there because it has to reach a much bigger area. Because if you're in the country, don't they then really up the...

**Magda:** That's right, they're more powerful? Yeah, that's right.

**Jini:** Yeah.

**Magda:** That's right.

**Jini:** So where would you be safer?

**Magda:** Well, the safest...the best way to find out is to measure what you're exposed to. That's the best way. We can guess as to what you'd be exposed to but the best thing to do is actually measure it. It also depends on how much metal is around you, so if you're in an office and you have a metal filing cabinet, metal reflects radiation so you can get a double whammy if it's coming through your window and then it's bouncing off a metal filing cabinet. That's why it's so important to measure this. There's too many things that affect your actual exposure, so distance alone is a poor surrogate. It's one surrogate that you can use, but it's not great by itself.

**Jini:** And then, one thing came to my mind, before when you were talking about putting the protective film on the windows if your neighbors have WiFi, or if you're near a cell tower, is that going to cut it enough, because can't the cell and...well, I'm not sure about the cell, but I think the WiFi radiation comes in through the walls, doesn't it?

**Magda:** Oh yeah, it'll come in through the walls. More of it will come through a window than through a wall. It depends what your walls are made of. So it will only reduce it. It won't eliminate it. That's why some people sleep under this canopy so they eliminate it; they eliminate their exposure for the eight hours they're in bed at night.

**Jini:** But then I've also heard you have to be careful. You have to put your canopy up and then you have to re-measure because if you've got something coming from under the floor...

**Magda:** Oh you've got to put it under your floor. You're totally boxed in. It's like building a Faraday cage for yourself, basically. You have to be totally boxed in. If you have something coming up under the floor, it'll magnify within this canopy.

**Jini:** Right. So you just box in the whole thing. You know, that might be something that might be a good idea to do anyway for everybody just because...I mean, have you done that with your bed?

**Magda:** No, I'm in a very clean environment. There's no cell towers near me. I filter my electricity. I don't have any cordless technology except for one cordless phone that doesn't radiate all the time and I use it only when absolutely essential. So... I have a cell phone that I hardly ever use; only when I travel. And it's for me to make calls, rather than for people to reach me. So I minimize my exposure. I use wired internet access at home and I use wired internet access at work as well.

**Jini:** And you don't have anything coming in from your neighbors?

**Magda:** No, our neighbors had a cordless phone and I mentioned this to them and they've replaced it with a corded phone because I actually said, "You know, you're being exposed much more than I am but I'm picking it up in my home." Our homes are separated by about 30 or 40 feet, so I'm quite fortunate in that regard.

I'm now beginning to pick up some of the WiFi from neighbors and I'm going to ask them if they'll just shut it off in the evenings so that when I'm sleeping, I'm not exposed. But my exposure is very low. People who are electrically sensitive have come to my home and they say they feel very comfortable in it. They don't have any of their symptoms.

**Jini:** Right, but really, you're still participating in that "don't know factor".

**Magda:** Yes, yes. And I try to minimize my exposure as much as I possibly can. I'm not excessive about it. I travel on airplanes and I go to airports and I'm in hotels that sometimes have wireless and so I'm stuck with it, but I'm not exposed nearly as much as most of my colleagues.

**Jini:** Yeah, it becomes a real...I mean it can keep you up at night and especially for me as a mother... You see me as an adult, I feel safe with your approach. I mean, and that's what I do for myself. But with my kids, I wonder if it's enough?

**Magda:** Yeah, you want to be even more careful with them, I agree.

**Jini:** You know, I'm wondering if okay, do we need to move to say, 20 or 30 acres and stick the house in the middle and...like how far do we need to go, so that in 10 years, my kids aren't...don't have a cancer or a... it's so hard to know.

**Magda:** It is. And you can't eliminate all stress in a person's life but you can certainly minimize it. You know there are communities...there's a community...it's called Green Bank in West Virginia and it's near a radio telescope. And it's a huge radio telescope that's picking up microwaves and radio frequencies from outer space. And because they have to-- they're picking up very, very weak signals, they won't allow cell phone use in the community. You can't have cordless phones. You can't have wireless routers. You can't even have energy efficient light bulbs, because they produce this radiation. Because it will interfere with the radio telescope.

So people who are electrically sensitive have actually gone to live there because they know that you can't put up a cell tower. It's illegal and so I think you've got to... and there are a few communities like that, that are popping up, where electrically sensitive people go and they're trying to keep it as clean as possible.

**Jini:** Right, so maybe just wait for more of those to be...because then we come to the same thing. It's like okay, so move to 20 acres out in the country but then what if they start adding more cell towers out there?

**Magda:** Exactly, exactly. It's almost impossible to go places and assume that nothing will ever come into your neighborhood. I think what we really need to do is educate the general public and educate the government, get the guidelines reduced. Educate doctors so that when patients come to them with these symptoms, instead of just giving them pills to reduce the pain, or to put them to sleep, or to get rid of the depression, they actually ask them a few questions about what they have in their homes and ask them to make changes in their environment. And that will actually help their symptoms as well.

**Jini:** Do you think another common one is anxiety--

**Magda:** Yes, it is.

**Jini:** Because when you were talking about the heart and the chest that sounds-- I had a friend who was describing an anxiety attack and that sounds exactly like what she experienced.

**Magda:** Yeah, that's right and that's what people tell me. It's like they're having an anxiety attack and I just tell them to go out...away from the environment they're in, just to move somewhere and if this is what's causing it, their attack will go away, and that's basically what they end up doing.

When it's children, they don't understand this and they get scared and so I tell parents to explain that to their children as well. I have one friend who has a daughter who has these attacks and she was going for some medical care at a hospital and they had a lot of wireless technology. And her daughter developed all of the symptoms, you know-- had an anxiety attack and the mother was cool enough headed but she said, "Look, we're going to be in here for a little while. As soon as we go out, it's going to go away." And she was right. She took the daughter out of the environment, as soon as they could get out, and the attack went away. And it wasn't an attack of fear of hospitals or anything like that. It was really something that was brought on by the wireless and electromagnetic pollution in that part of the hospital.

**Jini:** Well and yes, that's another huge thing is that a lot of the hospitals are going and have already gone wireless for all their communication and patient monitoring and...

**Magda:** That's right. But at one stage, you couldn't go into a hospital with your cell phone, because it would interfere with the sensitive equipment that was-- particularly equipment in intensive care. And what they're doing now, is they're shielding that equipment, so your wireless communication can't interfere with it. But we're not able to shield the people who are also responding, they're interfered with. So we can protect the equipment but we can't protect the individuals as readily.

**Jini:** Yes. So I think...I mean, basically, what the conclusions I'm going to take from this discussion is that: Each of us needs to do whatever we can, to help educate people. And also, like for the children, the decision to pull them out of school or whatever aside, we have some forms on [www.RadiationEducation.com](http://www.RadiationEducation.com) that parents can download and they're the wireless non-consent forms. So basically, they say, listen my child is not to be in a room where wireless computers are active, nor is my child to do any work on a wireless computer. I think it even states in there that they can't be right next to a wall adjoining a room where wireless computers are being operated. And there's another document to try and get your principal to sign to take liability, responsibility...

**Magda:** That's right.

**Jini:** ...and whether they will or not, is probably-- but at least they are then being forced to acknowledge that "My decision in this school, I am actually in a position of liability" and maybe if they see enough parents walking in saying, "You're saying this is safe? You take responsibility." Maybe the principals will start to think a little bit differently.

**Magda:** That's right and they should also talk to legal counsel for the school because I know some insurance agencies no longer insure you if you develop a brain tumor and you use a cell phone. So they want to cut their losses and so they've decided to take that route and if you don't have the appropriate insurance in the school, that's also going to be very costly in the long run.

**Jini:** Well, I've heard something about that. Health Canada, like Medicare, has moved-- is it some of the treatment for brain tumor patients as outpatient procedures, or outpatient procedures that you have pay for yourself?

**Magda:** Pardon, I'm sorry, how's that again?

**Jini:** I've heard that Medicare has revised their coverage for brain tumors, that there are now certain aspects of your care and your drugs that you now have to pay for yourself?

**Magda:** Oh, I didn't know. Okay, interesting.

**Jini:** Yeah, I don't have the hard-- I was just at-- someone had a talk, a lecture that mentioned that, but I haven't seen the actual information from Medicare about that. But it would make sense if the insurance companies are moving it out of their jurisdiction and the people who really are looking at the science are going, "You know what? We are going to have a whole lot of these cancers coming down the pike. We're not going to financially be able to cover it. What can we do to cover our butts now before Joe Public becomes aware of it and they take action?" Right?

**Magda:** Yeah.

**Jini:** So and then the other thing I'm going to take away from this call is that, to just do what you can to protect and reduce your exposure within your home environment - at least so you can get that restorative at sleep at night where the body has a chance to repair things.

**Magda:** That's right.

**Jini:** So putting the film on the windows or the curtains or...you know what else I was wondering? One last question: The radiation-shielding fabrics that I looked at, some of them were highly radiation-blocking, so they had a much higher silver content than others, which were almost like a light gauzy material. So they did block a lot, but I thought, well maybe because of the lower silver content, they would be less conductive. Do you think those would be suitable for a school environment?

**Magda:** No, the ones I've tested, I wouldn't bother with the ones that only block 30 to 40 percent. They're not nearly as good and I wouldn't even bother with them. I'd use the ones that really do block, to protect you against the radiation. And I think it's important not to have it against your body, to use it as outer clothing rather than underwear, so that it's not in touch with your skin.

**Jini:** Right and then do you think that you would need to then-- see because then we get into the problem of, well is it going to conduct electricity around, is it going to draw

electricity to the child? Do you have an opinion on that? Whether it's best to use it or not use it?

**Magda:** I think it's so much of an individual issue, so I would just recommend people to try it and see how their body reacts to it. If it's drawing electricity to them, they will feel it and it won't make them feel well. And I think that's why some of the people are complaining that it makes them feel worse, because that's exactly what it's doing in the environment they're in-- so it's very much environment specific.

**Jini:** Okay, all right. Well thank you so much, Magda.

**Magda:** Oh you're very welcome, Jini.

**Jini:** This has been a fabulous exchange of information and it's really been useful because when you do the research - and this is what my son found - is that you almost need a postdoctoral degree to just even understand everything. And there's so many facets like you were talking about. There's wattage, there's voltage, there's frequency, there's pulsed, there's non-pulsed. It's like you almost have to go back to school to be able to get a handle on all these things, so it's been wonderful talking to someone like you, who can take those things that are very complex and confusing and put them into terms that all of us can understand and really take in a practical way. So thank you for that.

**Magda:** Well thank you very much.

**Jini:** Okay, and do you have anything else that you would like to say, or anything that you feel is important for people to know just before we close?

**Magda:** Well, I guess, I'm very much pro-choice in the sense that I think people should make up their own minds as to what they want to be exposed to or not. Once you've become electrically sensitive, you lose that choice, because you simply cannot be in certain environments. And so, it's so important to protect your health and to keep

everyone as healthy as possible, for as long as possible. And that means voluntarily minimizing your exposure at home, at work, at school.

And I think we really have to protect the children. If we don't know whether there are long-term health effects of this technology, then we should definitely err on the side of caution and not expose them in a school environment for hours each day. And not expose them in a home environment for hours each day and during the night as well. So I think it's really...the responsibility is in our hands. The buck stops with each one of us and we have to make the right decisions for our family and for ourselves.

**Jini:** That's very, very good advice. For more information about Dr. Magda Havas or to contact her, you can go to her website at [www.MagdaHavas.com](http://www.MagdaHavas.com) and for more information about getting WiFi out of your children's school, the particular effects that it has on children and all of the forms that you can get your principal to sign, that you can pass around to other mothers in your school, a whole bunch of resources, go to [www.RadiationEducation.com](http://www.RadiationEducation.com)

**NOTE: What does the USA consider to be safe microwave radiation levels?**

"The FCC guideline ranges from 200 to 1000 microwatts/cm<sup>2</sup> based on frequency and is much higher than the guidelines recommended in New Zealand, Italy, China, Bulgaria, Hungary, Russia, Switzerland, Austria and in New South Wales, Australia."

(Source: **Analysis of Health and Environmental Effects of Proposed San Francisco Earthlink Wi-Fi Network** by Magda Havas, B.Sc., Ph.D.)