

Mobile phone towers – the price of connectivity

Mobile phone towers or antennas are a phenomenon of the age of instant connectivity and they affect us all. They emit radio-frequency radiation that affects our bodies and potentially our health, yet legislation presently gives extensive rights to the telecommunications industry at the expense of the public.

LYN McLEAN

Chances are that, wherever you live, you are being affected by the radiation from at least one mobile phone antenna. Chances are that, wherever your children go to school, preschool or play-group, they are being affected, too. Wherever you live, work or play, if your mobile phone is receiving a signal from a mobile phone antenna, then so are you.

There are already tens of thousands of mobile phone antennas in Australia. With another 7000 expected to be built in the next two years alone, mobile phone antennas are an issue that affects every one of us, especially if we live in an urban area. What are their implications for our health, where can they be erected, and what are our rights?

Mobile phone antennas, sometimes called phone towers or base stations, are the price we pay for instant connectivity. They range from the looming scaffold-like towers that dominate the suburban skyline to arrays of panel antennas located on poles or rooftops to tiny microcells located on inner-city traffic lights, in train stations or in shopping complexes.

Each of these antennas services the mobile phones in its local area or cell (hence the description "cell phones"). These cells can be anything from metres to kilometers in diameter, depending on the power of the antenna's signal.

Each of these antennas relays signals to and from the mobile phones it services in the form of radio-frequency radiation. If these signals were visible, we would see ourselves bathed in multiple layers of radiation. Imagine a blue signal from one mobile phone antenna overlaid with a red signal from another and a yellow signal from a third.

What is the impact of this radiation? It is generally accepted that radio-frequency radiation affects our bodies. What is less certain is just how seriously.

The Australian Government and the telecommunications industry take the view that the radiation from telecommunications networks is not a health risk. "The weight of national and international scientific opinion is that there is no substantiated evidence that RF emissions associated with living near a mobile phone base station or telecommunications tower poses a health risk."¹

Put simply, this means that a considerable number of studies have found that there is no evidence of risk from radio-frequency. This is hardly surprising given that much scientific research on this issue has been conducted and/or funded by the telecommunications industry itself.

Evidence of risk

Even so, many studies *have* found evidence of risk. Researchers have found that

radio-frequency radiation from various sources is *associated with* brain tumours, cancer, leukemia, heart problems, reproductive problems and effects on the nervous system, learning and performance, sleep, immunity, hormones and genes.

Only a few studies have been conducted specifically on mobile phone antennas themselves. In France, Dr Roger Santini conducted a survey of people living near mobile phone antennas. He found an increased rate of unpleasant symptoms within 300 metres of the antennas. People living within 10m of an antenna experienced symptoms of nausea, loss of appetite, visual disruptions and difficulty in moving. People living within 100m of an antenna experienced symptoms of irritability, depression, concentration problems, memory loss, dizziness and reduced libido. People living 100-200m from an antenna experienced headaches, sleep problems, "feelings of discomfort" and skin problems. People living between 200 and 300m from an antenna experienced a high rate of fatigue.²

A study in Spain produced similar results. Dr Gerd Oberfeld and his team assessed the impact of two GSM antennas on the population of the town of Murcia. They found that exposure resulted in increased reports of fatigue, irritability, headaches, nausea, loss of appetite, sleeping disorders, depression, feelings of discomfort, difficulty in concentration, memory loss, visual disorder, dizziness and cardiovascular problems.³

Not surprisingly, people are beginning to report uncomfortable effects from living near mobile phone antennas. Over the years I've been contacted by people experiencing motion sickness, fatigue, concentration problems, illness and seizure-like symptoms.

In the UK communities concerned about mobile phone antennas have begun collecting data. They have found a surprising number of cancer cases in the areas of highest exposures near towers that have been in place for many years. Although this is not a scientific study, it does suggest the need for further investigation, particularly of the long-term health impacts.

The effects of radio-frequency radiation on the general population have already come to the attention of medical practitioners. On 9 October 2002 a group of German doctors expressed their concerns that this radiation was having an adverse effect on their patients in what has come to be known as the Freiburger Appeal. They wrote, 'we can see ... a clear temporal and spatial correlation between the appearance of disease and exposure to pulsed high-frequency microwave radiation (HFMR), such as installation of a mobile telephone sending station in the near vicinity [and] intensive mobile telephone use.'⁴

The standard argument

The emissions from mobile phone antennas are well within Australia's safety standard.⁵ Typically, the amount of radiation you might expect to receive in the area around a base station is around 1-2 microwatts per square centimetre (W/cm²). This is around one thousandth of the standard which allows people to be exposed to around 1000 W/cm².

This would be extremely reassuring – if the standard were in fact protecting public health.

The Australian standard protects people primarily from health problems that are known to be caused when radiation heats the body by 1 degree C. And this it does admirably. However, considering only the heating effects of radiation may be like considering only the sound of a bullet being fired from a gun.

There is now a great deal of evidence that radiation is producing non-heating (athermal) effects on the body and this could explain the health problems that are being reported. There are now hundreds of studies that show adverse effects from radiofrequency radiation at non-heating levels of exposure – levels that are far below international standards. However, the standard provides no protection against any of them.

The Spanish phone antenna study mentioned above found unpleasant symptoms at levels a thousand times lower than the Australian standard. The authors wrote, 'based on the data of this study the advice would be to strive for levels [of exposure] ... equal to a power density of ... 1 W/cm².'

Some scientists have suggested mechanisms to explain how the effects at non-heating levels of exposure might occur. For example, radio-frequency radiation has been shown to lower levels of the hormone melatonin, a free-radical scavenger that protects against cancer. Exposure has been shown to result in cells releasing heat shock proteins (HSPs) which have also been associated with cancer. While none of these effects has yet been proven to cause health problems, they are certainly suggestive of risk.

Whatever the scientific and anecdotal evidence, for radio-frequency radiation to be a risk to health would be a monumental inconvenience to Australia's Government and telecommunications industry. The Federal Government has received billions of dollars from spectrum sales and licence fees and reaps lucrative income from the latter each year.

David vs Goliath

The telecommunications legislation enacted by the Federal Government gives extensive rights to the telecommunications industry and leaves precious few for the community. A 1997 Determination allows carriers to

override local government and state government regulations and install what is known as "low impact" antennas without the approval of the council or local community.⁶ (More on low impact facilities later.)

In fact, until two years ago, carriers could install these facilities without even notifying councils or communities and surprised neighbours would often arrive home to find an antenna being built next to their home. Subsequently a code was introduced to improve matters slightly. The Code for the Deployment of Radiocommunications Infrastructure, introduced in 2002, ensures that councils and local neighbours are notified and/or consulted about low impact facilities but does not empower them to reject the antenna.

Yet the carriers' powers extend far beyond the ability to construct low impact facilities without council or community approval.

Legislation currently allows a carrier to enter your land and build an antenna on it with or without your approval. The 1997 Telecommunications Act allows carriers to enter any land to assess it. It empowers them to build a "low impact" facility on the land without the landowner's approval. Further, it provides the option for the carrier to obtain a special permit to construct a non-low impact antenna on the land without the landowner's permission.⁷

While legislation allows carriers to override state and council legislation in building these antennas, it allows the community, at best, the opportunity to submit comments about a proposed antenna to the carrier or council. Needless to say, these submissions carry no real weight and their recommendations are not always heeded. The failure of telecommunications legislation to provide democratic rights for the community has led to a plethora of impassioned anti-phone-tower protests in this and other countries.

Is it really "low impact"?

The Australian Government has exempted "low impact" facilities from state and council planning regulations in order to facilitate the rapid rollout of telecommunications networks, using the argument that they are an essential service.

However, are these facilities "low impact" and do they represent an essential service?

First, let me make it clear that so-called "low-impact" facilities are not low impact in terms of the radiation that they emit. They can emit exactly the same amount of radiation – or theoretically even more – than an antenna that is not classified as

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"low impact".

The basis for classifying antennas as "low-impact" is their appearance! Theoretically, smaller antennas fit the classification as "low-impact". Yet in reality "low impact" facilities are not low visual impact at all, for they are often to be found in clusters on rooftops or on the top of tall poles.

Many of the antennas that are currently being built, including antennas of the new 3G [third generation -Ed] networks, are classified as "low impact". Because network requirements mean that these antennas must be built more closely together (sometimes as close as 900m), they are being constructed throughout residential areas, next to homes, schools and children's playing fields.

Nor, it might be argued, are mobile phones an essential service. While the ability to make phone calls has obvious benefits for convenience and safety, newer,

more novel features do not. The ability to connect to the internet, to take photos and videos, to text friends, to act as an alarm clock, to download interesting ring tones – are hardly essential services. Yet these are the features that are driving the construction of at least four 3G networks and the building of thousands of antennas in our communities.

Inasmuch as mobile phone antennas facilitate the operation of mobile phones, their construction is driven by our use of this technology. As long as we continue to use the technology often, we create demand for the antennas. As long as we continue to delight in the novel features of mobile phone technology, we create the demand for third generation – and subsequent generation – networks that that will provide us with connectivity. And it may just be connectivity from an antenna quite close to our house.



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Biography

- 1 ARPANSA Fact Sheet no 9, www.arpansa.gov.au
- 2 Santini et al, *Pathol Biol* 50: 369-373, 2002
- 3 Oberfeld, G et al, "The Microwave Syndrome – Further Aspects of a Spanish Study" soon to be published.
- 4 <http://www.emrnetwork.org/news/IGUMED>
- 5 "Radiation Protection Standard – Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz"
- 6 Telecommunications (Low-impact Facilities) Determination 1997 (as amended)
- 7 This is known as a Facilities Installation Permit and it can be obtained from the Australian Communications Authority.

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