

How to reduce mobile phone exposure

The Australian Mobile Telecommunication Association (AMTA) relies on the expert judgment of independent health authorities, such as the World Health Organization (WHO), for assessments of safety and health impacts.

Potential health impacts of radio frequency energy have been studied in great detail over the past 50 years. This has resulted in a substantial body of scientific literature in this field - covering laboratory, clinical and epidemiological research.

Comprehensive reviews of more than 2,900 research publications, including more than 900 studies specifically on mobile phones and base stations, by governments and health authorities continue to find there is no convincing scientific evidence of health effects.

However, AMTA agrees with leading health authorities who recommend if people are concerned they can easily reduce their exposure to mobile phone radio signals by limiting the length of calls, texting, or using 'hands-free' devices.

The WHO's current (2011) [factsheet](#) on electromagnetic fields and mobile phones concluded:

A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.

The WHO also provided the following information on how to reduce mobile phone exposure which the mobile phone industry supports:

Mobile phones are low-powered radiofrequency transmitters, operating at frequencies between 450 and 2700 MHz with peak powers in the range of 0.1 to 2 watts. The handset only transmits power when it is turned on. The power (and hence the radiofrequency exposure to a user) falls off rapidly with increasing distance from the handset. A person using a mobile phone 30–40 cm away from their body – for example when text messaging, accessing the Internet, or using a “hands free” device – will therefore have a much lower exposure to radiofrequency fields than someone holding the handset against their head.

In addition to using “hands-free” devices, which keep mobile phones away from the head and body during phone calls, exposure is also reduced by limiting the number and length of calls. Using the phone in areas of good reception also decreases exposure as it allows the phone to transmit at reduced power.

Mobile phones and base stations are designed, built and tested to comply with strict science-based safety standards, which include a substantial 50-fold safety margin.

Handsets and base stations are also designed to reduce power automatically to the lowest possible level to maintain a good quality connection. In practice, this means the mobile system automatically reduces the emission levels and lowers exposure.

In fact, [French](#) and [Swedish](#) studies have found that when talking on a mobile phone in urban, rural or indoor environments, smartphones connected to the 3G network typically operate at less than one per cent of the phone's maximum power output.



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Guide to reduce exposure from mobile phones

AMTA agrees with the WHO factsheet that for those with concerns the best way to reduce exposure is by:

- Increasing the distance from the handset by text messaging
- Using a “hands free” device
- Limiting the number and length of calls, and
- Using the phone in areas of good reception.

This guide is designed to help people take actions that reduce their personal exposure from mobile phones and answer some popular questions.

What is the best way to reduce my exposure?

The strength of the radio signals from a mobile phone is greatest near the phone’s antenna and reduces rapidly with distance. Therefore, the best way to reduce your exposure to the head is to use a portable hands-free device, either wired or Bluetooth, and hold the phone in your hand away from your body. You can also use a speaker phone option.

I have heard that a wired hands-free kits increases exposure?

It is a myth that wired hands-free kits increase exposure by acting as a route for the radio waves to travel along. Independent research in *Choice* in 2000 found personal hands-free kits used normally with the earpiece cable hanging naturally from the ear, reduce exposure by around 92 per cent.

Wouldn't the radio waves used by a Bluetooth device add to my exposure?

Bluetooth is radio technology designed to connect electronic devices using wireless, such as hands-free earpieces, to mobile phones. Bluetooth operates over very short distances, typically a few metres and is very low powered - about one hundred times lower than mobile phones. Therefore, using a Bluetooth hands free and moving your mobile phone further away from your head and body still reduces the total amount of radio waves you’re exposed to.

What about buying a phone with a low SAR rating?

The SAR values reported for each model of mobile phone are maximum values and do not reflect typical exposure received in everyday use. This is because mobile phones automatically adjust to the minimum power level needed to maintain a quality call. This automatic power reduction allows mobile phones to operate more efficiently to preserve battery life, increase talk time and reduce network interference.

SAR values are used to ensure mobile phones comply with safety standards, but they are not a reliable measure of exposure in everyday use.

Should I avoid placing my phone in a pocket right next to my body?

Mobile phones generally get the best reception when clear of nearby obstacles, including the body. Mobile phone user manuals provide information on correct usage including normal use positions. In most cases user manuals recommend that external antennas should not be touched. Phone models



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with internal antennas should not be touched near the antenna when using the phone. Some manuals also recommend distances that mobile phones should be kept away from the body - usually between 15mm to 25mm.

Do shielding or absorbing devices work?

Studies have shown that these products generally do not work as advertised. The WHO advises the use of commercial devices for reducing radiofrequency field exposure has not been shown to be effective.

Unlike portable hand-free devices, these so-called 'shields' can interfere with the proper operation of the phone. The phone may be forced to boost its power to compensate, which could increase your personal exposure.

Should I avoid using my phone in enclosed spaces like a bus or train?

No. This is another myth based on incorrect information. This myth assumes that all mobile phone signals are virtually trapped by the enclosure and add up creating a possible hazard. The reality is the phone signals are usually not trapped, vary in power and the signal level reduces very quickly with distance. Because mobile phones are low powered, you could simply not get enough phones to create a hazard. Also, if the signals were trapped, the phones simply would not work.

What about using a phone when moving at high speed – am I exposed more?

No. The output power of a mobile is continuously monitored by the network and adjusted to the lowest level possible to maintain a quality call. This feature is known as adaptive power control. When moving at high speed, you are more likely to roam between cells and the mobile will 'handover' while roaming. During handover, if you are in a call, GSM networks momentarily transmit the handover messages at full power to ensure connection, then power back to the lowest possible power. The handover at full power is less than a second and has negligible impact on the average phone power. CDMA and 3G networks determine the required power prior to handover. There is very little difference in the output phone power as a result of roaming between cells.

Should I avoid using a phone in low signal areas?

The output power from a mobile phone varies considerably during a call as a result of the network reception. In low signal areas a mobile phone will generally use more power to connect than in higher signal areas. Mobile phones are tested for safety compliance at maximum possible power and this covers all operating environments, including low signal areas.

In normal operation, the power from a mobile phone will vary depending on a number of factors, including the signal level from the network. Generally the closer you are to a base station, the better the reception and lower the output of your phone. However, it's important to remember that mobiles are tested for safety compliance in low signal areas. Consult the phone manual for tips on improving reception.

Do children need to take additional precautions?

It is entirely understandable that some parents may be concerned about mobile phone safety and their children's use of mobiles. Concerns have been raised about the possibility of greater



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vulnerability for children because of an increased susceptibility to health risks during developmental stages and because young people will use mobile phones for most of their lives

However, a number of independent reviews of all available science by international health authorities and governments have carefully considered this concern and found no evidence of any additional risk to children from mobile phone technologies.

Also, international safety standards have taken these concerns and potential risks into account when setting safe exposure limits.

While stating that there is no scientific justification for precautionary measures, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) offers [advice](#) to concerned parents along similar lines to those of the World Health Organization:

Community concern has been expressed with regard to mobile telephone use by children. At present, there is insufficient evidence in the science to substantiate the hypothesis that children may be more vulnerable to RF EME emissions from mobile phones than adults.

It's recognised that parents provide mobile phones to their children for different reasons, including their child's personal security as well as the assurance of their child being constantly contactable.

It is recommended that, due to the lack of any data relating to children and their long term use of mobile phones, parents encourage their children to limit their exposure by reducing call time, by making calls where reception is good, by using hands-free devices or speaker options, or by texting.

Additional Information

[World Health Organization \(WHO\)](#)

[Australian Radiation Protection and Nuclear Safety Agency \(ARPANSA\)](#)

[EMF Explained](#)



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