



NRL

National Radiation Laboratory

SAFETY OF CELLPHONES

Are cellphones safe?

The balance of current research evidence suggests that exposures to the radiofrequency fields produced by cellphones do not cause health problems provided they comply with international guidelines. Reviews of all the research, which has been carried out for more than fifty years, have not found clear, consistent evidence of any adverse effects.

Exposures from cellphones on sale in New Zealand all comply with limits recommended in the relevant New Zealand Standard¹. This Standard is based on international exposure guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). ICNIRP is composed of scientists working in government, universities and other independent research establishments, and is recognised by the World Health Organization for its expertise in this area.

Does using a cellphone increase the risk of brain tumours?

Studies do not show an increased risk of brain tumours in people who have used cellphones for periods up to ten years. There is little known about effects on people who have used cellphones for longer than that: while some studies suggest that there may be a small increased risk of tumours among the heaviest users, this pattern is not consistent and the researchers caution that the finding may be explained by biases in the way the studies were carried out. Laboratory research on cell cultures and animals exposed over their lifetimes does not show any effects of radiofrequency fields on tumour incidence.

Should I reduce my exposure?

Current research does not indicate the need to reduce exposures if they already comply with safety limits. Nevertheless it is never possible to prove safety absolutely (of radiofrequency fields or any other agent), and there is uncertainty about the significance

¹ New Zealand Standard 2772.1:1999 *Radiofrequency Fields Part 1: - Maximum exposure levels 3 kHz - 300 GHz*

of some research findings. If individuals wish to reduce their exposure, there are several simple methods to do so:

- Use the phone in places with a good signal strength, which allows the phone to transmit at reduced power. Phones using the newer CDMA or 3G (UMTS) technologies usually provide greater reductions in power.
- Minimise the length of time spent on calls.
- Use a conventional landline phone (ie, not cordless), or car kit with an external antenna

Using a cellphone while driving (with or without a hands free kit) is not recommended, as studies have consistently demonstrated that this substantially increases the risk of accidents.

Is it safe for children to use cellphones?

The limits in the New Zealand exposure standard take account of differences between adults and children, and are designed to provide protection for all age groups. If there are any subtle effects which have not yet been discovered, then children under 16 might be more vulnerable due to their longer lifetime exposure (although there is currently no evidence of any effect which accumulates over time). While little research has specifically investigated effects of exposures on children, that which has been carried out (on reaction times and other cognitive effects) has not demonstrated any effects.

Use of cellphones by children should be a matter for informed choice by parents, bearing in mind that cellphones can improve personal safety.

Do hands-free kits or other accessories reduce exposures?

Tests of hands-free kits have generally found that they reduce exposures to the head by up to 98%. To reduce exposure to all parts of the body, the phone should be placed away from the body when making a call.

No stick-on pads or patches have been shown to reduce exposures.

How can I obtain information on the exposure from a cellphone?

Exposure from cellphones is measured as the specific absorption rate, usually abbreviated to SAR, and measured in watts per kilogram (W/kg). This number expresses the rate at which radiofrequency energy is absorbed in the body. The maximum SAR is normally supplied with a cellphone. Information should also be available from the manufacturer. In the New Zealand exposure Standard, the maximum SAR level permitted over any 10 gm of body tissue is 2 W/kg.

The maximum SAR might be one factor to consider when purchasing a phone. However, it does not give a complete picture of exposures in actual use, as cellphones automatically reduce their output power in areas of good or intermediate signal strength. The amount by which exposure is reduced may vary between different models of phone, and depending on the technology being used.

Where can I get more information?

The NRL web site www.nrl.moh.govt.nz provides links to several recent reports which have been published on cellphones and health.

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