



## 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 persuasive evidence of any adverse effects.

Exposures from cellphones on sale in New Zealand all comply with limits recommended in the relevant New Zealand Standard<sup>1</sup>. 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.

Users should pay attention to any safety instructions in the user manual about minimum separation distances between the phone and the body to ensure that exposures comply with these limits.

### Does using a cellphone increase the risk of brain tumours?

Overall, studies do not show an increased risk of brain tumours in people who have used cellphones for periods up to ten years. There is less information 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 do not provide good support for there being an effect of radiofrequency fields on tumour incidence, and there are no indications of an increase in brain tumour rates since cellphones were first introduced.

The International Agency for Research on Cancer (IARC) reviewed the data in May 2011 and concluded that, in view of the studies suggesting an increased risk in the heaviest users, cellphones should be classified as “possible” carcinogens. This

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

classification does not mean that a risk has been established, but that there is data suggesting the possibility of a risk. Other “possible” carcinogens include car exhaust, coffee and pickled vegetables. (For comparison, IARC consider that smoking, alcoholic beverages and x-rays are established carcinogens, and diesel exhaust is a probable carcinogen.)

### Should I reduce my exposure?

While there is no clear indication of risks from cellphone use, it is never possible to prove safety (of radiofrequency fields or any other agent), and the IARC conclusion highlights uncertainties about the significance of some research findings. If individuals wish to reduce their exposure, there are several simple methods to do so:

- Use one of the newer CDMA/XT or 3G (UMTS) technology phones, which generally transmit at much lower powers than the previous generation of phones.
- Use a hands-free kit or speaker-phone. To reduce exposure to all parts of the body, the phone should be placed away from the body when making a call.
- 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 (even with a hands-free kit) is not recommended, as studies have consistently demonstrated that this substantially increases the risk of accidents. Using a hand-held phone while driving is illegal.

### Is it safe for children to use cellphones?

The limits in the New Zealand exposure Standard are designed to provide protection for all age groups. The maximum exposure in the head from a cellphone is the same for both children and adults. However, because their heads are smaller, children tend to have higher exposures than adults in parts of the brain closest to the phone. If there are any subtle effects which have not yet been discovered, then children might be more vulnerable due to their longer lifetime exposure and developing nervous systems. 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.

### 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%.

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 shown in the cellphone user manual. 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 good 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, the technology being used, and the network to which the phone is connected.

### **Does a cellphone transmit when it is not being used?**

No. The phone does not transmit unless you are on a call, except for a very brief transmission a few times per hour to keep registered with the mobile phone network.

### **Where can I get more information?**

The NRL web site [www.nrl.moh.govt.nz](http://www.nrl.moh.govt.nz) provides links to several recent reports which have been published on cellphones and health.

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