



**Australian Government**

**Australian Radiation Protection and Nuclear Safety Agency**

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and Nuclear Safety Agency**

**Supplementary submission to the Senate  
Environment and Communications Legislation  
Committee**

**Inquiry into the Telecommunications Amendment  
(Mobile Phone Towers) Bill 2011**

April 2012

Thank you for the opportunity to provide further information to the Committee.

On behalf of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) I wish to make the following supplementary submission.

## **Scope of discussion**

This submission provides further information in regard to:

1. Mobile phone base station regulatory framework
2. Australian Government actions to address public health concerns
3. ARPANSA's role in relation to mobile phone base stations
4. ARPANSA's activities in relation to mobile phone base stations
5. ARPANSA's advice to the Australian public

## **1. Regulatory Framework**

Mobile phone base stations include radio transmitters that radiate electromagnetic energy (EME), also known as Radiofrequency EME (RF EME), into the surrounding area. The levels of these electromagnetic fields must comply with safety limits imposed by the Australian Communications and Media Authority (ACMA) in the [\*Radiocommunications Licence Conditions \(Apparatus Licence\) Determination 2003\*](#). (ACMA is a statutory authority within the Department of Broadband, Communications and the Digital Economy.) The safety limits in this document are based on the ARPANSA [\*Radiation Protection Standard - Maximum Exposure Levels to Radiofrequency Fields - 3kHz to 300GHz\*](#).

ACMA also requires compliance with industry codes of practice including the Australian Communications Industry Forum (ACIF - now called Communications Alliance Ltd) [\*C564:2004 Industry Code – Deployment of Mobile Phone Network Infrastructure\*](#). (This code has recently undergone review, including public consultation, but is yet to be adopted by ACMA.)

Under this code, the operators of mobile phone networks (carriers) have certain obligations when planning, installing or upgrading mobile phone base stations. These include providing information about predicted levels of EME in the vicinity of a new or upgraded facility. The Code requires this information to be prepared in accordance with the [\*ARPANSA Prediction Methodology\*](#) and presented as a report in an approved [\*ARPANSA Environmental EME Report format\*](#). Environmental EME Reports for almost every Australian mobile phone base station, in metropolitan and regional areas, can be found in the [\*Radio Frequency National Site Archive\*](#).

The ARPANSA and the State and Territory radiation regulatory authorities have no regulation of RF EME emissions from mobile phone base stations. Only a small part of the ARPANSA Standard is captured by the ACMA regulatory framework and the bulk of the Standard remains non mandatory.

## **2. Australian Government action to address public health concerns**

Since 1996, the Australian Government has provided \$1 million dollars per annum for the Electromagnetic Energy Program. This program supports research into, and provides information to the public about, health issues associated with mobile phones, mobile phone base stations and other communications devices and equipment. The program recognises public concern, and the need to ensure standards and public health policies continue to be based on the best available scientific information. The program is funded by a levy on radiocommunication licensees collected by the Australian Communications and Media Authority (ACMA).

The EME program has three elements:

- an Australian research program managed by the National Health and Medical Research Council (NHMRC) to conduct research into EME issues of relevance to Australia and to complement overseas research activities,
- continuing Australian participation in the World Health Organization's (WHO) [International Electromagnetic Fields \(EMF\) Project](#) which assesses the health and environmental effects of RF EME exposure and research needs, and
- a public information program (managed by ARPANSA) to provide information to the public and the media.

An EME Reference Group has also been established to provide community views to Government on EME issues. This group includes representatives from consumer organisations, the telecommunications industry, the health sector, academic organisations, other government organisations and community groups.

## **3. ARPANSA's role in relation to mobile phone base stations**

ARPANSA, as part of the Health and Ageing Portfolio, is the Federal Government agency charged under the *ARPANS Act 1998* with responsibility for protecting the health and safety of people from the harmful effects of ionising and non ionising radiation. The Parliamentary Secretary to the Minister for Health and Ageing has executive responsibility for ARPANSA.

The ARPANS Act 1998: outlines the mandate of the organisation and functions of the CEO, including the promotion of uniformity of radiation protection and nuclear safety policy and practices across all jurisdictions; establishes the Radiation Health and Safety Advisory Council, the Radiation Health Committee and the Nuclear

Safety Committee as advisory bodies to the CEO of ARPANSA; and outlines the licensing and regulation of Commonwealth entities in relation to a broad range of radiation sources and facilities from nuclear installations through to radioactive materials and apparatus such as x-ray machines.

Non-ionising radiation is what we are talking about with mobile phone base stations. ARPANSA does not have a licensing and/or regulation responsibility in relation to mobile phone base stations. Our focus is supporting the:

- promotion of national uniformity of the associated radiation protection policy and practices through our work in the Radiation Health Committee and the publication of standards and codes to inform, and provide a foundation to, the work of the relevant licensing, regulation and industry bodies; and
- providing information to the public to better inform them of the potential harmful effects of radiation, including what is known about the possibility of harm from RF EME from mobile phone base stations.

#### 4. ARPANSA activities in relation to mobile phone base stations

In promoting national uniformity of radiation protection policy and practices across all jurisdictions, the CEO is assisted by the Radiation Health and Safety Advisory Council, the Radiation Health Committee and the Nuclear Safety Committee.

The Radiation Health Committee is established under the ARPANS Act to advise the CEO and the Radiation Health and Safety Advisory Council on matters relating to radiation protection, including formulating draft national policies, codes and standards for the promotion of uniform national standards of radiation protection for consideration by the Commonwealth, States and Territories. This Committee includes representatives from each of the nine jurisdictions in Australia.

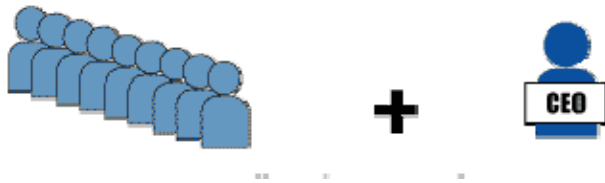
#### Radiation Health and Safety Advisory Council



The council identifies emerging issues relating to radiation protection and nuclear safety, examines matters of major public concern in this area and provides advice to the CEO.

2 radiation control officers, 1 public representative and up to 8 other members

## Radiation Health Committee



The Committee develops publications to promote uniform national radiation protection standards and formulates draft national policies, codes and standards for consideration by the Commonwealth, States and Territories. It also reviews national policies, codes and standards to ensure that they reflect world best practice.

A radiation control officer from each State and Territory, 1 representative from the Nuclear Safety Committee, 1 public representative and up to 2 other members

## Nuclear Safety Committee



On request, the Committee provides advice to the CEO and Council on matters relating to nuclear safety and the safety of controlled facilities. It also develops publications and policies in relation to these matters.

A representative of local government from an area affected by a matter related to the safety of a controlled facility, 1 representative from the Radiation Health Committee, 1 public representative and up to 8 other members

## *National Directory for Radiation Protection*

The Radiation Health Committee first released the [National Directory for Radiation Protection](#) in 2004 as the Australian Health Ministers' Conference endorsed uniform national framework for radiation protection in Australia.

This framework provides nationally agreed requirements for the protection of people and the environment against exposure or potential exposure to ionising and non-ionising radiation; requirements for the safety of radiation sources, including provision for the national adoption of codes and standards; and clear regulatory

statements for adoption by the Commonwealth, States and Territories into their legislation.

### **The ARPANSA Radiation Protection Series**

Codes and standards that make up the Radiation Protection Series are referenced documents in the National Directory on Radiation Protection and play a role in improving uniformity of radiation protection practices throughout Australia.

[The Radiation Protection Series](#) includes:

- standards (with fundamental requirements),
- codes of practice (which are regulatory in style, but more practice-specific than standards),
- safety guides (providing explanatory information to assist in meeting codes and standards),
- recommendations (providing advice on good practice).

In some cases a code and safety guide on the one topic are published jointly.

Publications are drafted by working groups reporting to Radiation Health Committee. The process for approval of publications is managed by the Radiation Health Committee, and when approved by this Committee, the Radiation Health & Safety Advisory Council advises the CEO on adoption of the documents for publication.

All publications developed by ARPANSA that could potentially be used by regulators as conditions of licence or registration (primarily codes and standards) are subject to the principles for best-practice regulation making agreed by the Council of Australian Government (COAG): [COAG Best Practice Regulation - A Guide for Ministerial Councils and National Standard Setting Bodies \(Oct 2007\)](#).

The process includes a period of public comment (for a minimum of 1 month). Drafts are published in the Drafts for Public Comment section of the ARPANSA web site along with the regulatory impact statement. Publications that do not require regulatory impact statements are also released for a period of public comment at the draft stage. A wide range of interested groups and individuals are informed that the publication is available for comment, and for publications with a wide public interest, the comment period is advertised in relevant newspapers. Specific instructions for making submissions are released with each draft.

## ARPANSA Radiation Protection Standard 3 - Maximum Exposure Levels to Radiofrequency Fields - 3kHz to 300GHz

The [Radiation Protection Standard - Maximum Exposure Levels to Radiofrequency Fields - 3kHz to 300GHz](#) (the Standard), is a Radiation Protection Series standard which specifies limits of human exposure to radiofrequency fields in the range 3kHz to 300GHz to prevent known adverse health effects. It specifies basic restrictions for occupational exposure, general public exposure, as well as more practical reference levels to assess compliance.

The associated Fact Sheet and supporting technical information to the Standard can be found at: <http://www.arpansa.gov.au/Publications/Codes/rps3.cfm>

### *What are the requirements in ARPANSA Standard for general public exposure?*

Relevant control measures for public exposure are listed in Section 5.7 of the Standard. This Standard requires certain measures to be undertaken for the protection of members of the general public who may be exposed to RF EME fields due to their proximity to antennas or other RF sources including:

- a) Determination of the boundaries of areas where general public exposure limits levels may be exceeded. In accordance with international and current Australian standards, the Standard permits evaluations of potential exposures other than by direct measurement.
- b) Restriction of public access from these areas where the general public exposure limits may be exceeded.
- c) Appropriate provision of signs or notices complying with AS 1319 (Standards Australia 1994).
- d) Notification to the competent authority, as required, in the event of the exposure exceeding the relevant limits.
- e) Minimising, as appropriate, RF EME exposure which is unnecessary or incidental to achievement of service objectives or process requirements, provided this can be readily achieved at reasonable expense. Any such precautionary measures should follow good engineering practice and relevant codes of practice. The incorporation of arbitrary additional safety factors beyond the exposure limits of this Standard is not supported.

### *How are the limits in the standard set?*

ARPANSA reviewed existing standards and national and international reviews, and took the 1998 Guidelines of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) for limiting exposure to time-varying electric, magnetic, and

electromagnetic fields (up to 300 GHz) as the primary basis for the exposure limits in the Standard.

ICNIRP is officially recognised by the World Health Organization and the United Nations International Labour Organization as the international independent advisory body for non-ionising radiation protection.

In developing the Standard (which was published in 2002), ARPANSA independently looked at the relevant scientific literature, and in particular the evidence for any low-level non-thermal effects, to examine whether the ICNIRP 1998 exposure Guidelines might need revision on the grounds that exposure to levels within the limits could lead to adverse health effects.

### *Does the Standard require a precautionary approach for public exposure?*

The exposure limits in the Standard include significant safety margins below exposures known to cause adverse effects. The general public exposure limits include additional safety margins over and above those incorporated into the occupational limits.

The Standard also discusses the use of precautionary measures. For example subclause 5.7 (e) requires: “Minimising, as appropriate, RF exposure which is unnecessary or incidental to achievement of service objectives or process requirements, provided this can be readily achieved at reasonable expense. Any such precautionary measures should follow good engineering practice and relevant codes of practice. The incorporation of arbitrary additional safety factors beyond the exposure limits of this Standard is not supported.”

Conditions for demonstrating compliance with the applicable requirements of the Standard are the responsibility of the relevant regulatory body (such as ACMA) and/or through agreed protocols and codes of practice (such as the previously mentioned ACIF Code C564:2002). Publication of standards and codes does not necessarily make them a part of legislation. It is up to licensing and regulation authorities to decide which elements they incorporate and how they are incorporated.

### *How and when is the standard reviewed and/or revised?*

The Radiation Health Committee has a formal review program in place whereby publications will be reviewed every ten years or as key scientific developments become clear. Unless a review identifies that there have been changes in technology or the science underpinning the particular practice or industry, the publications are not necessarily updated and/or revised and republished at that time.



Scientific evidence is considered by ARPANSA as it comes to light and informally reviewed. Review does not necessarily lead to revision. A standard can carry the title of its year of initial publication even though associated literature has been reviewed since that time.

ARPANSA is currently undertaking a formal review of the recent scientific literature (with a cumulative view of the literature published since the release of this standard in 2002) on the health effects of radiofrequency exposure. An expert panel is being established to assist with this review and their report to the Radiation Health Committee is expected later this year. Should evidence arise to indicate that the exposure limits do not provide adequate protection, then the Standard will be revised.

Given revision of the Standard would have to follow the Council of Australian Governments guidelines (which include the requirements for public consultation), regulatory impact assessment and Office of Best Practice Regulation approval, as well as Ministerial sign off across all jurisdictions, any revision of a standard can take several years before it came into effect.

## **ARPANSA's public information**

### **ARPANSA base station surveys**

ARPANSA conducts base station surveys to validate the predictions in carriers' EME reports and provide general information on real exposures, but not to assess carrier compliance with the ARPANSA Standard. (Compliance is the responsibility of ACMA.)

These surveys are carried out with financial support from the Mobile Carriers Forum (MCF) - a division of the Australian Mobile Telecommunications Association (AMTA).

The survey is managed solely by ARPANSA with measurements being carried out by RF assessors accredited by the National Association of Testing Authorities. Financial support from the MCF has been used to fund the contracts for the accredited measurements. Choice of exact measurement locations, analysis of results and preparation of summary data for internet publication is carried out by ARPANSA.

There are three steps in the measurement process:

1. an initial desktop assessment to determine suitable measurement locations;
2. broadband measurements of all mobile phone downlinks in the vicinity of the base station; and
3. final measurements at five selected locations.

In the current [ARPANSA Base Station Survey \(2007- 2012\)](#), all measurements collected are well below the limits defined by the Standard.

### Other ARPANSA website information

ARPANSA also maintains a variety of resources and information on the ARPANSA website in regard to RF EME, mobile phones base towers, associated health effects and the Standard ([www.arpansa.gov.au](http://www.arpansa.gov.au)). For example:

- We publish a series of fact sheets prepared by the Committee on Electromagnetic Energy Public Health Issues to help explain the current thinking on mobile phone communications and health: EME Series Fact Sheets <http://www.arpansa.gov.au/eme/index.cfm>
- We publish a wide range of Fact Sheets across ionising and non-ionising radiation to better inform the public about the research, science and health effects of different forms of radiation. In particular, the Fact Sheet on Mobile Telephone Communication Antennas and Health Effects may be of interest: [http://www.arpansa.gov.au/radiationprotection/Factsheets/is\\_antenna.cfm](http://www.arpansa.gov.au/radiationprotection/Factsheets/is_antenna.cfm).
- We publish a monthly EMR Literature Survey on published literature related to electromagnetic fields and health in the frequency range 0-300 GHz (which includes literature on radiofrequency fields - 3kHz to 300GHz) <http://www.arpansa.gov.au/radiationprotection/emr/literature/index.cfm>

### Direct contact with the public

At ARPANSA we take our community responsibility seriously and accept and respond directly to queries from individuals through the ARPANSA online contact form or our freecall number (1800 022 333).

### What is the ARPANSA telling the public about mobile phone base station health effects?

There is no substantiated evidence in the existing scientific literature that living near a mobile phone base station causes adverse health effects.

There is little evidence of a link between exposure to RF EME and adverse health effects in people at levels below the limits specified in the ARPANSA Standard. This is particularly so at the typical environmental levels encountered around mobile phone base stations.

However, ARPANSA and the WHO acknowledge the uncertainties that remain and an absolute absence of any risk to health can't be demonstrated. Some research results continue to be suggestive of possible adverse health effects and this had led the International Agency for Research on Cancer (IARC) to classify RF EME as

'possibly carcinogenic to humans', based on data regarding wireless phones (rather than mobile phone base stations).

We recognise that the IARC classification, and not having an absolute position on any risk to health in regard to mobile phone base stations, can be a concern to the community.

Of reassurance to the public should be that ARPANSA considers these issues and has included the precautionary minimisation requirement for unnecessary exposure in the Standard and offers advice and recommendations on ways to reduce personal exposures from handsets.

ARPANSA continues to closely monitor the research being conducted in this field.

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Carl-Magnus Larsson

CEO

ARPANSA