

A practical perspective: How has Australia dealt with implementation of the new 2020 RF GDLs?

Ken Karipidis
ICNIRP





Question some people in Australia ask

Who is going to protect us from the “radiation soup” because of 5G, Wi-Fi, smart meters and other sources?



ARPANSA protects the community

Who is ARPANSA?



Australian Government
Australian Radiation Protection
and Nuclear Safety Agency



Our aim is to

Protect the Australian people and the environment from the harmful effects of radiation

Some of the ways we do this is by:

- Undertaking research
- Collaborating with other authorities and experts
- Engaging with the community
- Developing radiation protection standards

Two issues with protecting the community from RF exposure

RF exposure is mainly produced from telecommunications sources



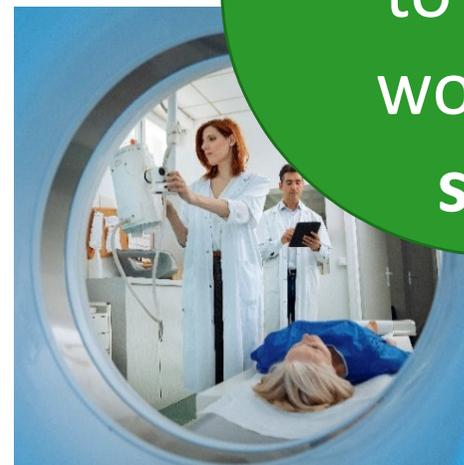
It's important for the public to feel safe

Exposure to the public is extremely low

There is the potential for high exposure to workers in certain industries

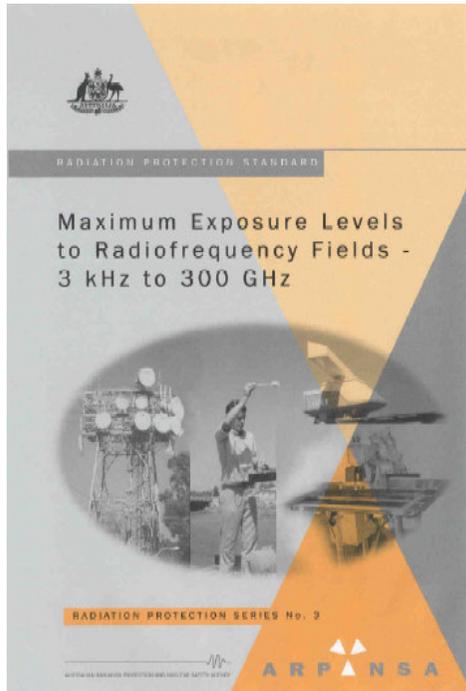


It's important to keep workers safe



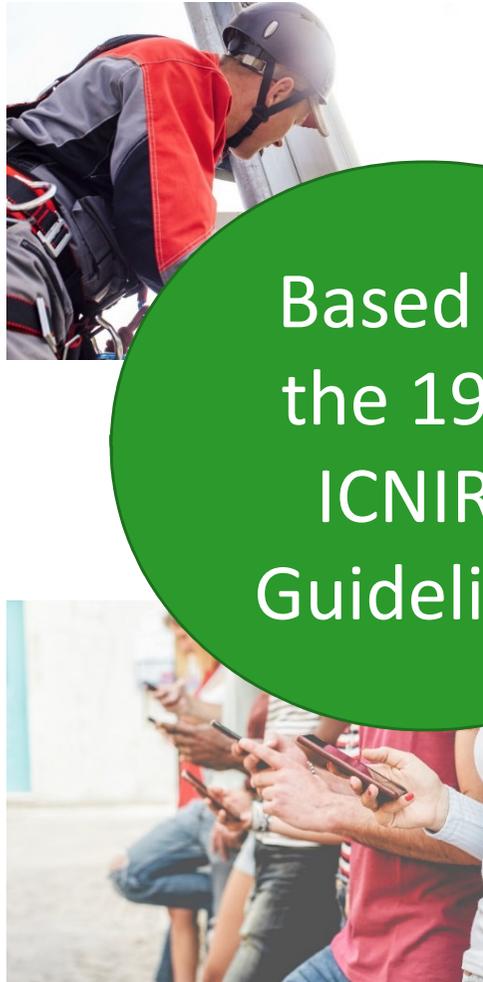
So how does ARPANSA protect the community?

ARPANSA RF Standard (2002)

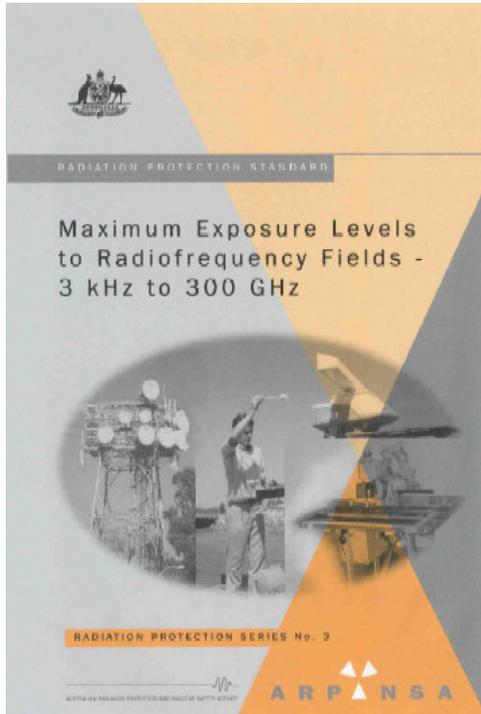


Occupational limits

General public limits

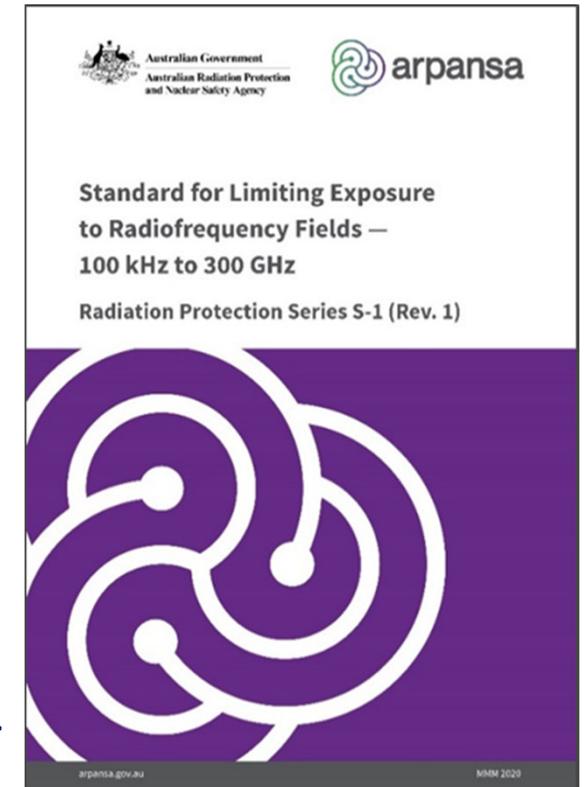


Based on
the 1998
ICNIRP
Guidelines



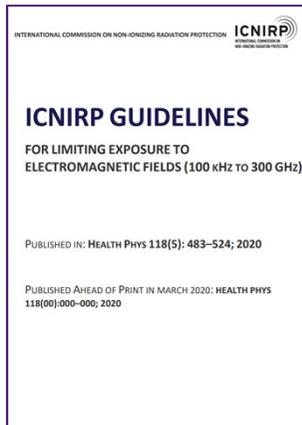
2002

2021



The implementation journey

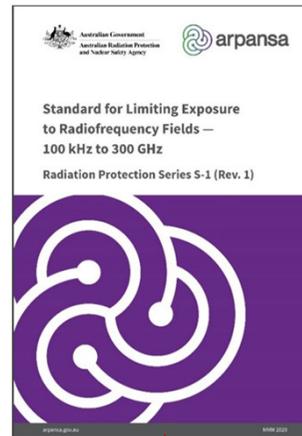
Mar 2020



Preparation

Consultation

Feb 2021



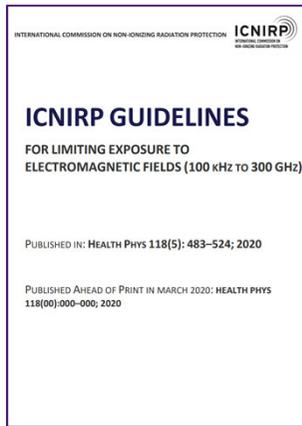
Regulation

Application

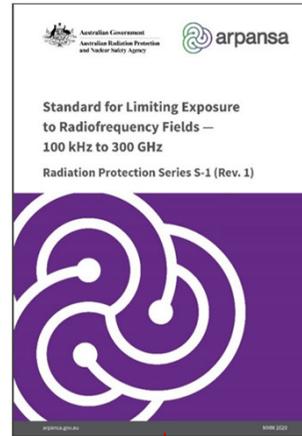
Education

The implementation journey

Mar 2020



Feb 2021



Preparation

Consultation



ARPANSA consulted extensively with all the relevant stakeholders in implementing the ICNIRP limits in the new Standard

Formal processes:

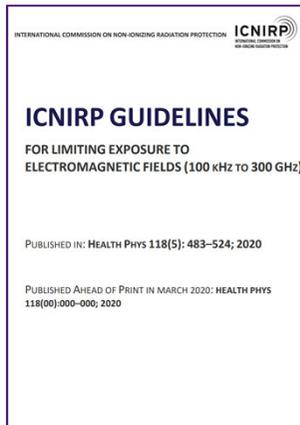
- Regulation Impact Assessment
- Stakeholder forum
- Public consultation



You have to bring all stakeholders along the implementation journey in order to instil confidence in the Standard

The implementation journey

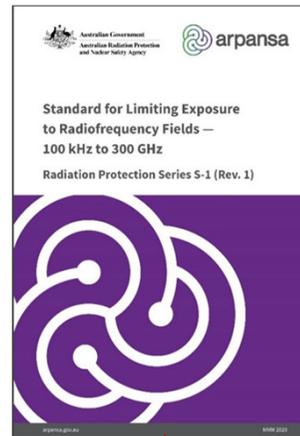
Mar 2020



Preparation

Consultation

Feb 2021



Regulation

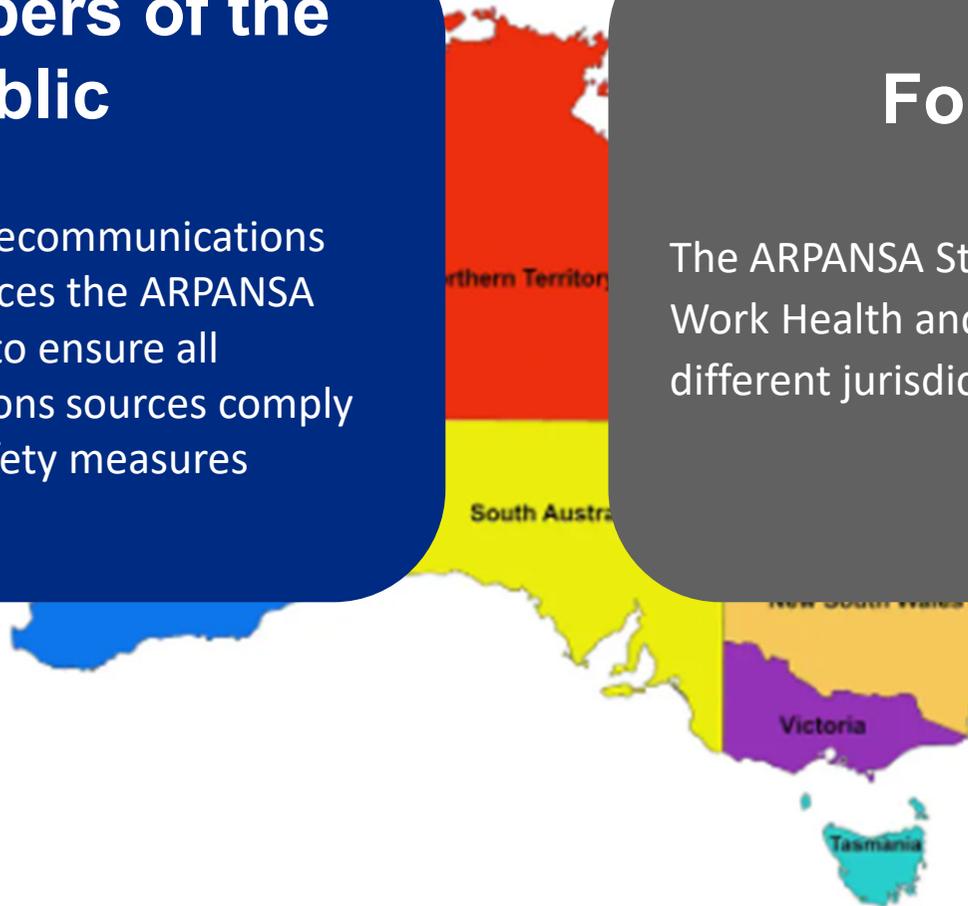
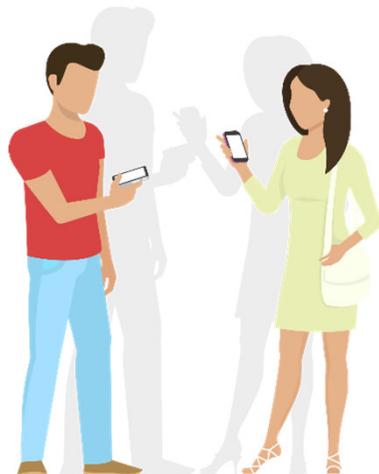
Regulation of RF exposure in Australia is complex

For members of the public

The national telecommunications regulator enforces the ARPANSA Standard to ensure all telecommunications sources comply with the safety measures

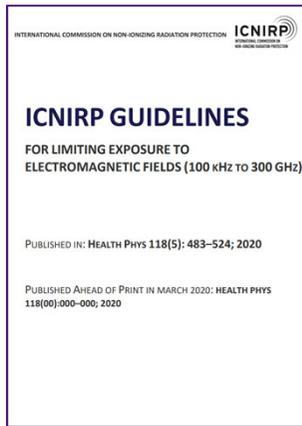
For workers

The ARPANSA Standard can be applied by Work Health and Safety Regulations in different jurisdictions



The implementation journey

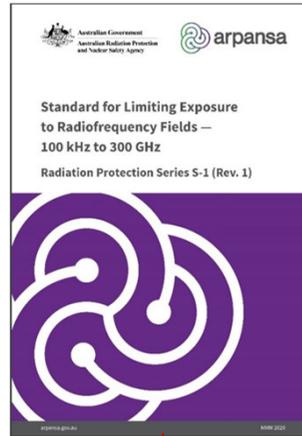
Mar 2020



Preparation

Consultation

Feb 2021



Regulation

Application

The main principles of protection are underpinned by the ICNIRP exposure limits



No member of the general public is exposed to RF fields that exceed the General Public Limits

- May be continually exposed
- May not be aware that the exposure is occurring
- Can not reasonably be expected to take precautions to minimise or avoid exposure



No occupationally exposed person is exposed to RF fields that exceed the Occupational Limits

- Higher limits
- Only permitted under controlled conditions
- Requires a risk management regimen



Application of the
ARPANSA
Standard is more
than just referring
to the ICNIRP
exposure limits

The Standard also includes



Requirements for
verifying compliance
with the exposure
limits



Requirements for
protection of the
general public



Requirements for the
management of risk to
workers

Verification of compliance with the ICNIRP exposure limits is important

Extract from the Standard

Where RF fields are produced, either deliberately or incidentally, by the operation of equipment or devices it is the responsibility of the

- manufacturer/supplier,
- installer,
- employer,
- service provider,

to ensure that all devices and installations are operated in such a way as to not expose people above the limits of the Standard

The ARPANSA Standard requires verification of compliance

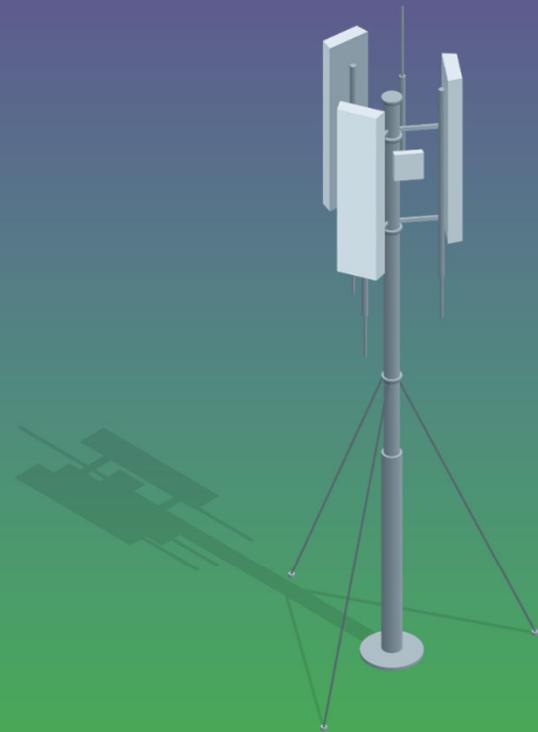
- The ARPANSA Standard requires that compliance with the exposure limits must be verified by direct measurements or by computation
- The new Standard refers to relevant RF measurement standards



Low-powered devices are exempt from testing



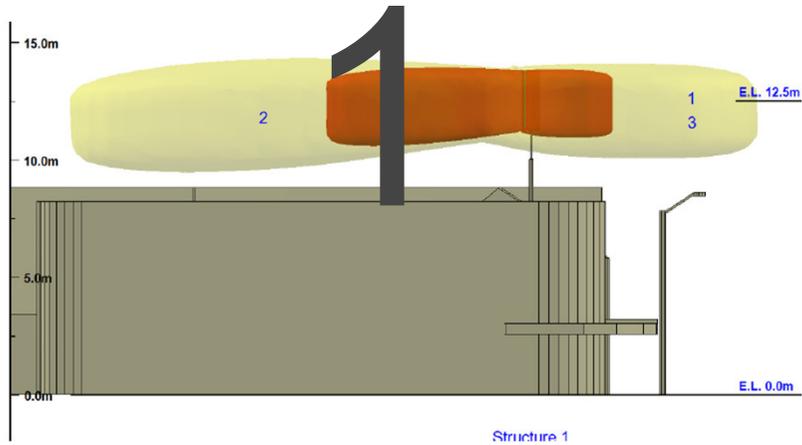
The ARPANSA Standard specifies requirements for protection of the general public



- Relevant for close proximity to high-powered transmitters
- Not relevant for low-powered devices like mobile phones, tablets and Wi-Fi-routers



Requires the determination of the boundaries of areas where general public exposure limits levels may be exceeded



Requires the restriction of public access to areas where the general public exposure limits may be exceeded



Requires the appropriate provision of signs or notices

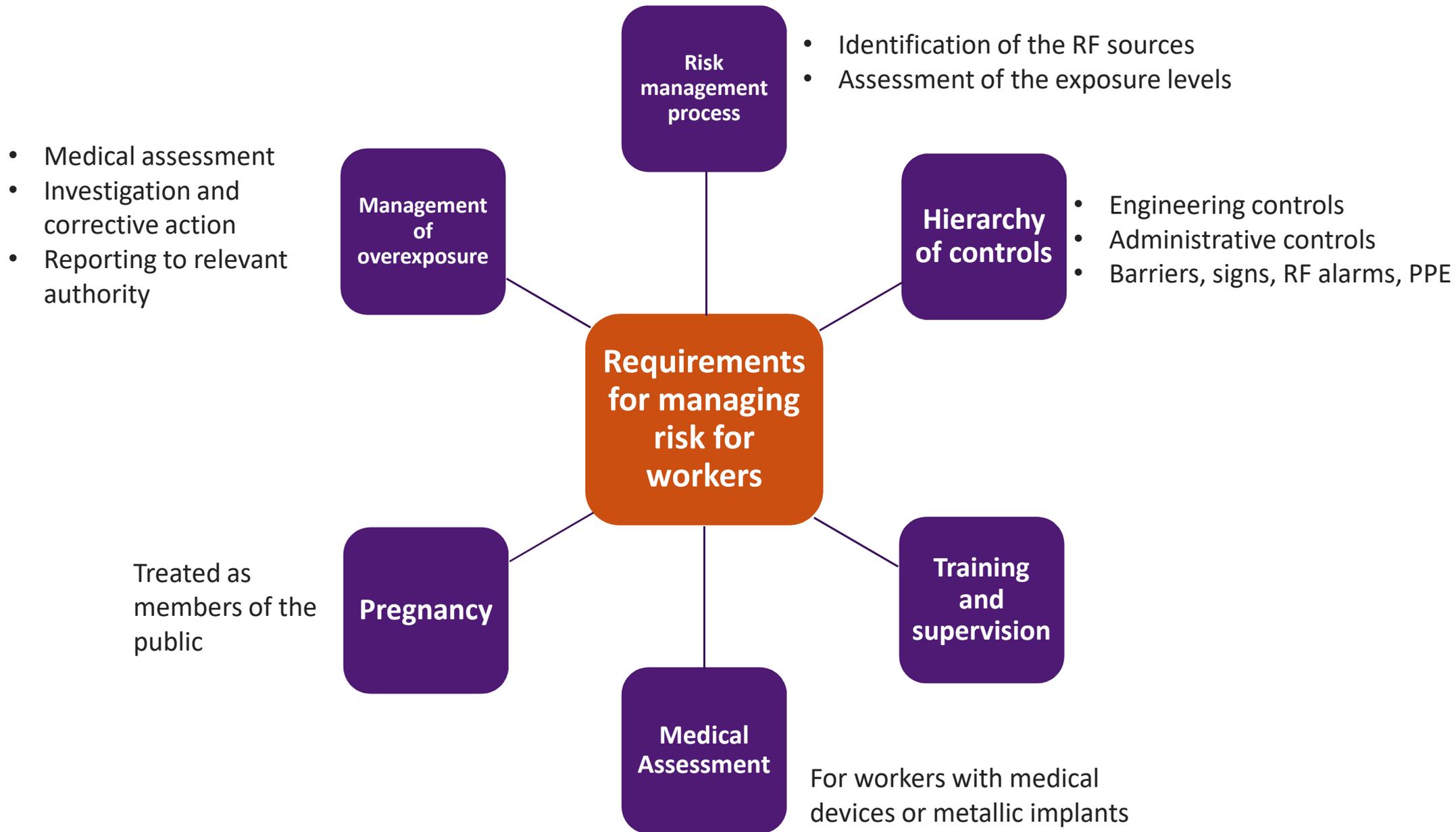


Requires a management process in the event of a member of the public exceeding the limits:

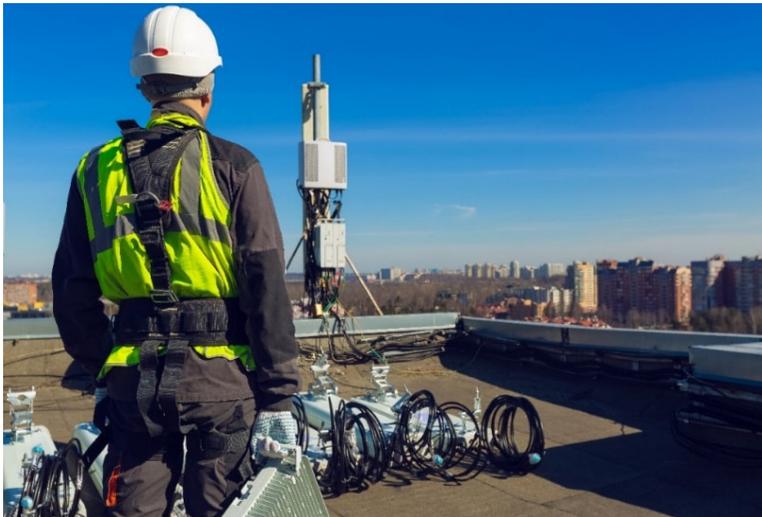
- Medical assessment
 - Investigation of the incident and corrective action taken
 - Reporting to the relevant radiation protection authority
- A large number '4' is overlaid on the list.

**The ARPANSA Standard
specifies requirements for
the management of risk
to workers**





Which workers are occupationally exposed?



The ARPANSA Standard provides clear classification of groups of people who are occupationally exposed

RF worker

A person who may be exposed to RF fields in the course of and intrinsic to the nature of their work

Controlled area worker

A person other than an RF worker who may be required to work in a controlled area

Aware user

A person who is appropriately trained to use two-way radios and other portable wireless devices

Visitor

A visitor to a controlled area who is under direct supervision

Controlled Area

An area or place in which exposure to RF fields may reasonably be expected to exceed general public exposure limits

An example of the application of a Controlled Area Worker

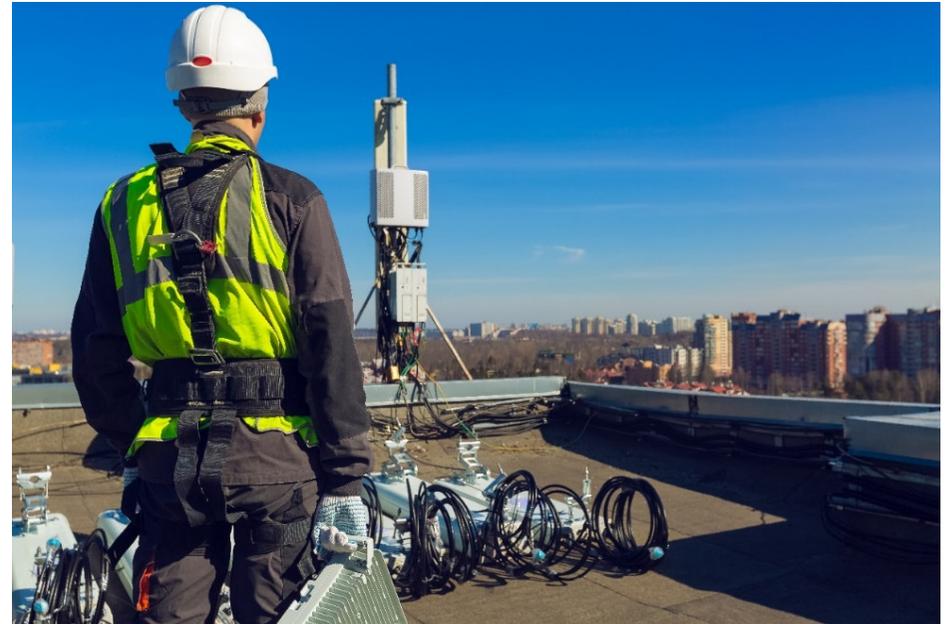
Building maintenance workers near RF transmitters

In the old Standard

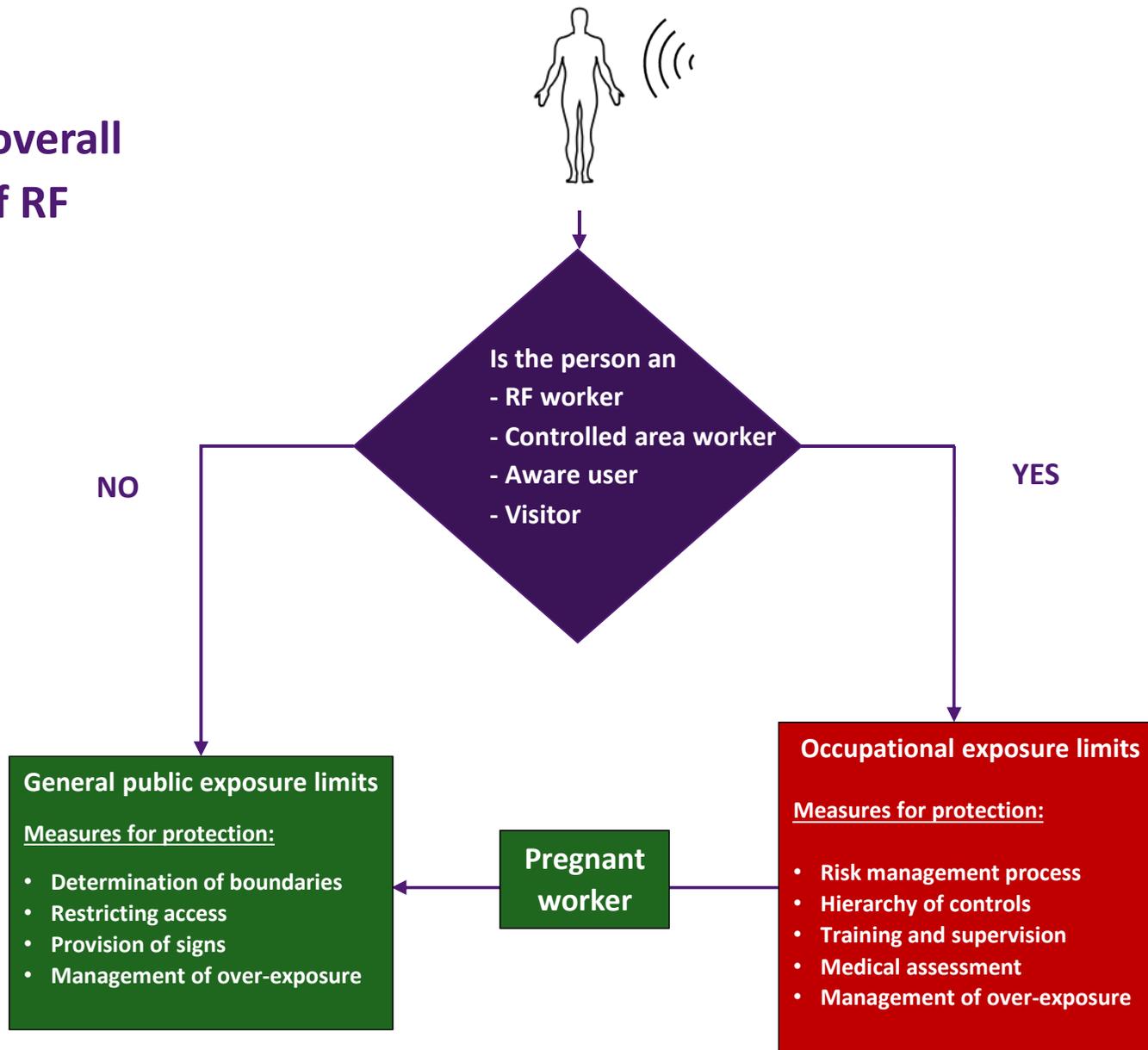
Considered as members of the public which significantly complicates the management of their access to the site

In the new Standard

Considered “Controlled area workers” that can be occupationally exposed with appropriate risk management

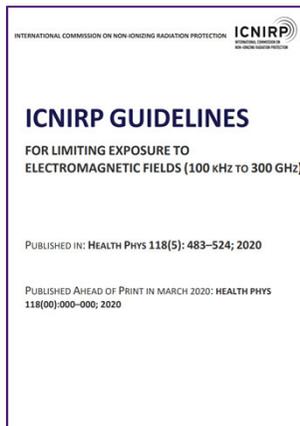


Looking at the overall management of RF exposure



The implementation journey

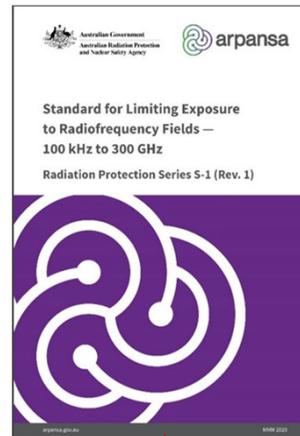
Mar 2020



Preparation

Consultation

Feb 2021



Regulation

Application

Education

Common questions ARPANSA receives on the new RF Standard through **Talk-to-a-Scientist**

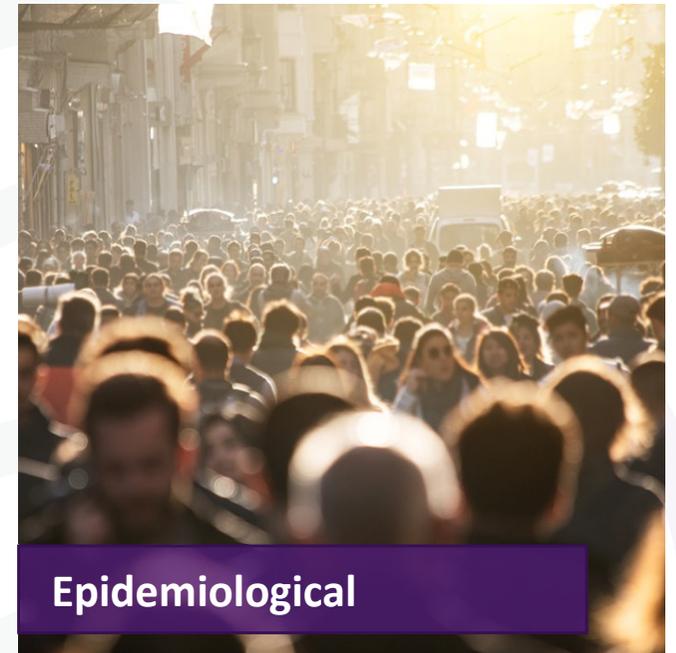


Does the Standard protect against 'non-thermal' or long-term effects such as cancer?



The Standard protects against all known effects

Thousands of different types of studies (**in vitro**, **animal**, **epidemiological**) have looked at whether low level radio waves cause long-term health effects, especially cancer



There are two main conclusions when assessing all of the studies

There are

no long-term effects

(such as cancer) from radio waves that have been proven

In fact there is

no substantiated evidence of any health effects

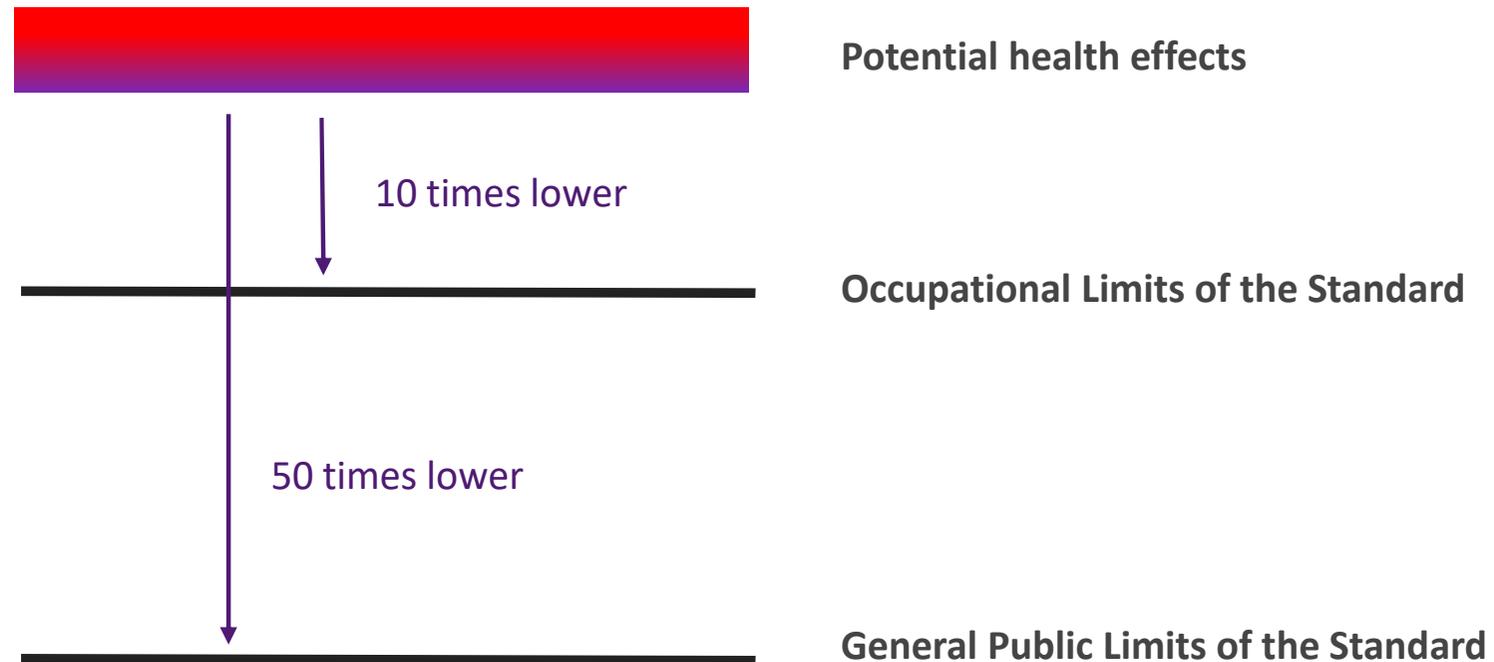
from radio waves at levels below the limits of the Standard

Why are the exposure limits of the Standard set so high?

I've heard that other countries have much lower exposure limits



In fact the limits of the Standard are set much lower than where health effects are known to occur



Does the Standard protect groups of people that may be more sensitive?

Children
Pregnant women
The elderly
People that are sick

The Standard
protects everyone



Remember the limits of the Standard are set much lower than where health effects are known to occur

Much lower to account for variability in the population



Does the Standard protect against radio waves from multiple sources in the everyday environment?

One source of radio waves might be safe, but what about exposure from multiple sources like my phone, wi-fi and cell towers?



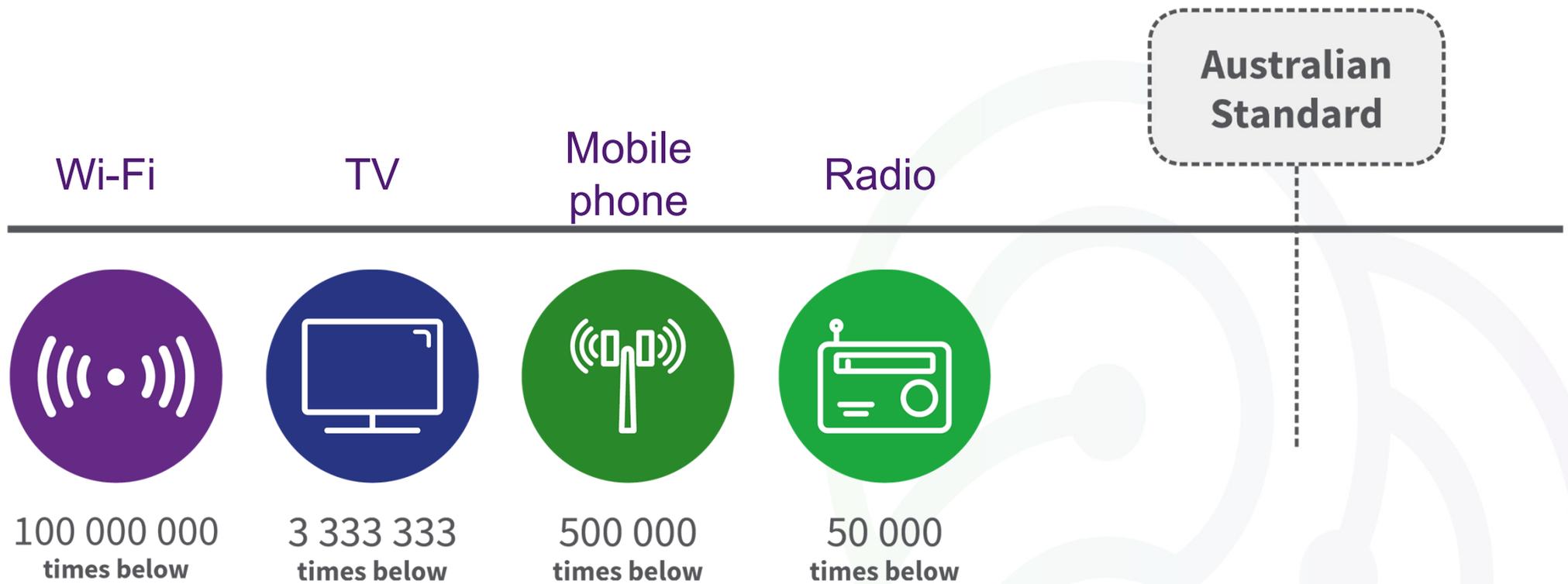
The ARPANSA Standard protects against the combined exposure from all sources

Important to know

The intensity of radio waves reduces very rapidly with distance so although we may be exposed to radio waves from various sources it is close proximity to a particular source (e.g. when using a mobile phone) that will typically dominate the exposure



The combined exposure from other sources in the every day environment is extremely low



The combined exposure from other sources in the every day environment is extremely low

Combined exposure

Australian Standard



30 000
times below



50
times above

Does the Standard protect
against 5G?

The **ARPANSA Standard**
covers all sources using
radio waves, including 5G

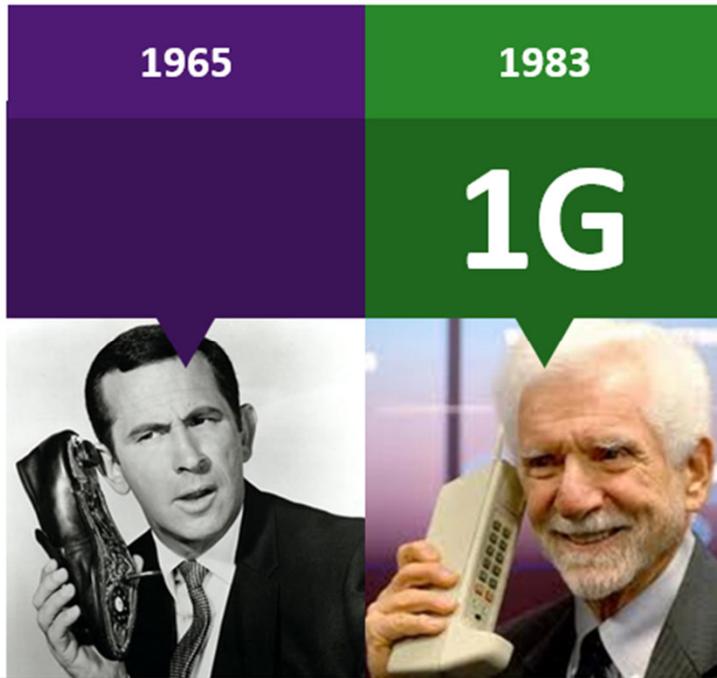


We certainly have come along way in mobile telecommunications

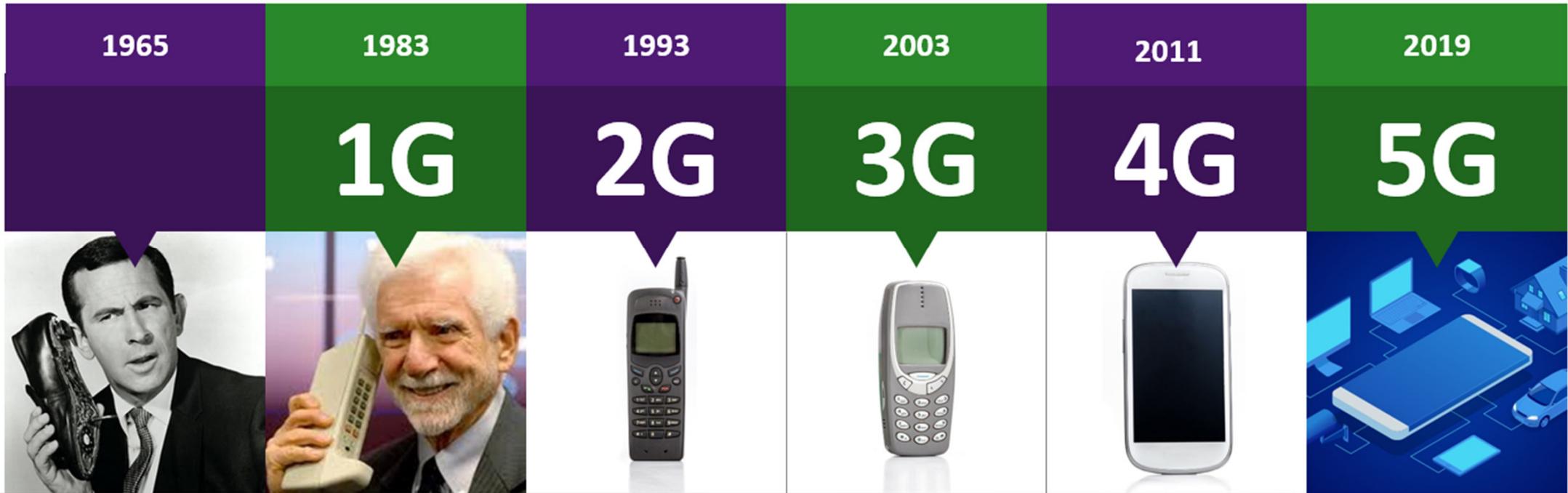
1965



We certainly have come along way in mobile telecommunications



We certainly have come along way in mobile telecommunications



“5G” is a brand name – it still uses radio waves just like all wireless telecommunications

..... and 5G has nothing to do with Coronavirus



In summary

The new ARPANSA Standard is aligned with the international best practice ICNIRP guidelines to protect the community against all known adverse health effects from exposure to radio waves



6 Key Messages about the new Standard

1. It takes into account the current state of scientific research
2. It continues to be conservative
3. It is designed to protect everyone including children, pregnant women, the elderly and the infirm
4. It is applicable to all radio wave sources, including 5G
5. It is designed to protect against the combined exposure from all sources in the everyday environment
6. It is designed to protect against exposure of any time duration (from instantaneous to long-term)

Thank you

k.karipidis@icnirp.org

ken.karipidis@arpansa.gov.au

