ICNIRP, 5G, Guidelines & Health

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What is the ICNIRP?

• Not-For-Profit Non-Governmental Organization in official relations with World Health Organization & International Labour Organization

• To develop and disseminate science-based advice on limiting exposure to non-ionizing radiation, including radiofrequency fields relevant to 5G

• Independent from industry (similar Conflict of Interest rules to WHO); members financial disclosures available at www.ICNIRP.org
How is 3G/4G/5G safety ensured?

- ICNIRP Guidelines for limiting exposure to electromagnetic fields (100 kHz-300 GHz); Health Phys. 2020, 118(5):483-524
- Providing that exposure from 5G devices complies with the Guidelines, no harm will occur
How are restriction values determined?

- Identify lowest exposure level that can cause harm
  - e.g. 4 W/kg causes 1°C body core temperature rise

- Apply reduction factors to that exposure level to obtain safety restrictions
  - e.g. reduce 4 W/kg by a factor of 50 and set general public exposure restriction to 0.08 W/kg
  - this is too low to cause detectable increase in body core temperature
Threshold for whole body exposure health effects

Exposure Magnitude

- Safe
- Unsafe
- Reduction Factors

Restrictions

3G/4G/5G

Safe in most situations

Above limits

Below limits
Common misconceptions about the ICNIRP Guidelines
But what about...

• “All this sounds good, but what about all the stories that I’ve heard in the media?”

The Independent, UK:
*Mobile phones “more dangerous than smoking”*
But what about (#1)

• “the GDLs only protect against thermal effects”
  – all potential effects are considered; the GDLs specifically looked for ANY evidence of health effects, regardless of the mechanism
  – however, where a mechanism is known (such as thermal), this enabled us to use a larger body of science to ensure appropriate restrictions
But what about (#2)

• “but there is evidence that RF EMF causes diseases such as cancer”
  – although there are reports of this, the consensus is that there is no evidence of this (e.g. SSM 2015/16/17; SCENIHR 2015)
But what about (#3)

• “but the GDLs don’t protect electro-hypersensitive people”
  – GDLs provide protection, even for those reporting sensitivity to RF; however, there is no evidence that this is caused by RF
  – indeed, the only strong evidence coming out of this domain is that belief (and not exposure) is sufficient to cause symptoms
But what about (#4)

• “but why do the GDLs ignore all those studies that show that RF causes harm?”
  – No research is ignored
  – Some excluded because not relevant (e.g. a biological effect without health consequence)
  – Some is not interpretable due to methodological limitations
  – Some has been shown to be incorrect (e.g. by failed replication attempts)
    • i.e. both ‘X’ and ‘NOT X’ cannot be true
But what about (#5)

• “but the GDLs only consider acute effects”
  – reports of both acute and chronic effects are considered; however there is no evidence supporting the claims that there are chronic effects (such as cancer)
  – by basing the restrictions on the only substantiated effects, protection is provided against ALL effects of RF EMF
But what about (#6)

• “but you CAN’T say it’s safe with *absolute certainty*!”
  – This is a big issue, that goes beyond ‘science’
  – What do we mean by ‘certainty’?
But what about (#6)

- **Scientific certainty**
  - Sufficient certainty to know that smoking causes cancer, certain vaccines reduce communicable disease risk, etc
  - This is the only useful interpretation of ‘certainty’

*If this is what we are talking about, then it is appropriate to say that we are certain that 5G exposure will not cause harm*
But what about (#7)

• “but they want to put a cell tower on top of my building, surely *that* can’t be safe!?"
  – again, so long as exposure is within the GDLs, there will be no health effects from this
  – aesthetics is another matter…
But what about (#8)

• “but 5G is new and there is no research on that!”
  – This is a misunderstanding of how science works
  – The name that we give a technology is not relevant to safety
  – What is relevant is the physical agent (the electromagnetic field), and we understand this very well

WE WOULDN’T WANT TO IGNORE THE WARNING ON A CIGARETTE PACKET JUST BECAUSE IT WAS A NEW STRAIN OF TOBACCO THAT HADN’T, ITSELF, BEEN TESTED!!!