SCHOOL WI-FI RISK ASSESSMENT

1. Wi-Fi is non-thermal radiofrequency radiation (RFR) which can cause ill health

Non-thermal RFR like Wi-Fi can cause immediate and cumulative, conscious and subconscious effects:

- Cognitive, memory and sleep problems, anxiety, headaches, nosebleeds and other electrical sensitivity (ES) symptoms. Up to 3% of pupils are severely affected and 30% to some extent.
- Long-term effects: e.g. infertility, neurological and cardiovascular problems, DNA damage, and
- Cancers, as known since 1953; some experts think RFR should now be a class 1 carcinogen:
    - RFR such as Wi-Fi was classified as a 2B possible cancer agent by WHO/IARC in 2011.
    - The $30m FDA/NTP study found 'clear evidence' that non-thermal RFR causes cancer.

2. Thermal limits do not protect against harm from non-thermal RFR like Wi-Fi

The UK government still recommends only thermal limits, such as ICNIRP's 2020 Guidelines. These thermal limits do not protect pupils or staff against established harm from non-thermal RFR Wi-Fi.

3. Schools need their own non-thermal RFR Risk Assessment (RA)

Since ICNIRP's Guidelines are not a risk assessment and are still only thermal limits, each school needs to produce its own non-thermal RFR risk assessment and decide whether to continue with ICNIRP's unprotective thermal limits or adopt protective non-thermal limits.

At present there are two international risk assessments covering both non-thermal and thermal RFR:

- ICBE-EMF, 2022
- ICNIRP's General Approach, 2002

These recognise that some people suffer ill health from non-thermal RFR and that these especially need non-thermal RFR limits. For equality, all pupils and staff need full non-thermal RFR protection.

In 2021 the US Court of Appeal required the FCC to provide a risk assessment for non-thermal RFR.

4. People especially vulnerable to Wi-Fi harm include children and some teachers

The international risk assessments and limits recognising non-thermal RFR adverse health effects also recognise, in addition to people with genetic variants, groups which are especially vulnerable to RFR:

- children
- pregnant women
- children/adults with ES
- the elderly
- the chronically ill

5. International non-thermal RFR limits

A school's non-thermal RFR risk assessment should be referenced to one of the several international non-thermal RFR guidelines. Electric field values are particularly important in areas where pupils and staff are likely to spend long periods of time, such as classrooms and dining halls.

6. Other RFR on school premises

A school's non-thermal RFR RA, in addition to Wi-Fi, should include RFR from other sources, such as nearby phone masts external to the school premises but causing ill health in pupils on school premises. Although use of pupils' mobile phones is now restricted in most schools, the RA could also note any problem areas for sensitive people like children from the use of staff or visitors' wireless devices.

7. Replacing Wi-Fi with cables, or Li-Fi if proved safer: cognitive benefits

Harmful non-thermal RFR from Wi-Fi can be avoided by using ethernet cables, or Li-Fi if proved safer. Countries like France ban or restrict Wi-Fi in infant and primary schools. Studies have shown better cognitive performance in schools with lower RFR levels compared to schools with higher RFR levels.

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1. Wi-Fi is non-thermal radiofrequency radiation (RFR) which can cause ill health severely affecting up to 3% of pupils

- Pall ML: "Wi-Fi is an important threat to human health" *Environ Res.* (2018) Article.
- Belpomme D et al.: "The Critical Importance of Molecular Biomarkers and Imaging in the Study of Electrohypersensitivity. A Scientific Consensus International Report" *Int. J. Mol. Sci.* (2021) Article.
- Bevington M: "The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments" *J Environ Health Sci.* (2019) Article.
  EMF geomagnetic disturbances change blood pressure subconsciously in 91% (Dimitrova, 2004, Abstract)

RFR including Wi-Fi was classified as a 2B possible cancer agent by WHO/IARC in 2011:

- International Agency for Research on Cancer (IARC), World Health Organization (WHO): "IARC Classifies RF EMFs as possibly carcinogenic to humans" Press Release no. 208 (2011). Article (2013).

The NTP study found 'clear evidence' that non-thermal RFR causes cancer; RFR should now be a class 1 carcinogen:

- "NTP Technical report …" *National Toxicology Program.* (2018) 900 MHz. 1900 MHz.
- Miller AB et al.: "Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102)" *Environ Res.* (2018) Article.

2. Thermal limits do not protect against harm from non-thermal RFR like Wi-Fi

- International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF): "Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G" *Environ Health.* (2022) Article.

Non-thermal RFR harmful effects, known from 1932, have been deployed in warfare since 1953 by the military.

3. Schools need their own non-thermal RFR Risk Assessment (RA) since this is not covered by thermal RAs/Limits

- ICBE-EMF: "Scientific evidence invalidates health assumptions … FCC and ICNIRP … " (2022) Article.
- ICNIRP: "General approach to protection against non-ionizing radiat." *Health Phys.*(2002) Article. p.546.
- The Health & Safety at Work Act 1974 requires employers to provide a safe working environment.
- The Management of Health and Safety at Work Regulations 1999 "require employers to: assess the risks to staff and others affected by school activities in order to identify the health and safety measures that are necessary" (DfE, "Health and safety: Advice on legal duties and powers. For local authorities, school leaders, school staff and governing bodies" 2014, p.5).

ICNIRP's thermal Guidelines (p.483) exclude implants. HSE's thermal Guide (p.21) lists Wi-Fi as an implant risk. Since the 1990s insurers have refused to underwrite non-thermal RFR hazards except as high risk like asbestos.

4. People especially vulnerable to Wi-Fi harm include children and some teachers

HSE's guide, based on thermal limits irrelevant to Wi-Fi, still recognises sensory effects and people at particular risk, e.g. expectant mothers, those with implants or declaring a condition with susceptibility to Wi-Fi/EMF harm:

- HSE: "Electromagnetic Fields at Work: A guide to the Control of EMFs at Work Regulations: 2016". p.13,17.

Pupils and teachers can be forced to leave schools and a pupil's suicide has been recorded because of Wi-Fi/ RFR. Exposure to non-thermal Wi-Fi/ RFR can trigger hypersensitivity; employers delaying removal have been fined. In 2006 a UK school removed Wi-Fi and RFR for a teacher adversely affected. In 2022 a UK upper tier tribunal ruled that the school of a pupil with EHS under the Equality Act 2010 should remove Wi-Fi or similar RFR (Link).

5. International non-thermal RFR limits, mainly based on the principle of No Observable Adverse Effect Level (NOAEL):

- Bioinitiative 2012, • EUROPAEM EMF Guidelines 2016, • IGNIR 2018, • Seletun 2010.
- Bevington M: "Health Concerns of 5G and Setting Suitable Restrictions" *Int J Res Biol Sci.* (2024) Article.

6. Other RFR on school premises

- Hardell L et al.: "An Eight Year Old Boy Developed Severe Headache in A School Close to A Mast with 5G Base Stations" *Ann Clin Case Stud.* (2024) Article.

7. Cognitive benefits from reduced RFR; increased risks of cancers, ES symptoms, etc, from increased RFR

- Meo SA et al.: "Mobile Phone Base Station Tower Settings Adjacent to School Buildings: Impact on Students' Cognitive Health" *Am J Mens Health.* (2018) Article.
- Balmori A: "Evidence for a health risk by RF on humans living around mobile phone base stations: From radiofrequency sickness to cancer" *Environ Res.* (2022) PMID: 35843283. Article.