

## RF radiation risk – in whom should you believe?

The Biolntiative Working Group asserted [1] (2007) that adverse health effects have been demonstrated from exposure to radiofrequency (RF) fields at levels below current guidelines. "The entire basis for safety standards is called into question, and it is not unreasonable to question the safety of RF [energy] at any level."

The above report was picked up by the media because it seemed newsworthy.



Figures 1a, b & c - Typical WiFi products: wireless router, laptop and digital enhanced cordless telecoms (DECT) phone.

It has been reported to us that some parents are concerned that RF radiation in Wi-Fi systems in schools may be harming the health of children. It would seem that these parents do not trust the safety limits on RF radiation set by the government. The RF radiation limits that apply here in the UK are ones recommended by international safety bodies and endorsed by the Health Protection Agency (HPA).

The scientific literature on RF bioeffects contains several thousand scientific papers. Review of this body of evidence takes special effort and expertise.

In contrast to the openness of the HPA are the methods used by some advocacy groups. If a group sets out to campaign on an issue then they have an agenda to stand by. Their minds tend to be closed to other views, or to evidence that is not to their liking. Campaign groups often purport to be scientific. Indeed they may comprise of groups of scientists. They are often arch sceptics and as scepticism is one of the qualities of science they can make themselves out to be saintlier than others, fighting to overturn perceived wrongs, or martyrs, having placed themselves outside the scientific consensus.

It is right that the level at which any public safety limit has been set is continually challenged by testing it against the evidence. But challenges have to be fair. It is sadly a fact that the challenges made by some campaign groups have been found to be unfair. The Guardian columnist and author of 'Bad Science', Ben Goldacre [2], has exposed many unfair practices – the MMR scare scandal being one.

In 2009 the journal 'Health Physics' published a report by the Committee on Man and Radiation (COMAR) [3] into the work of a group of scientists calling themselves the Biolntiative Group, authors of the Biolntiative Report (BIR), quoted from at the start of the article. COMAR found that the BIR had based its assertion on unfair means that the international safety limits of exposure to RF radiation could be dangerously high and should be lowered many-fold.

## COMAR made the following criticisms of BIR:

1. The scientists who came together to form the Biolntiative group all believed at the outset that RF radiation is much more dangerous than is supposed by international and governmental authorities. Because of the fringe nature of the group, any decision they came to would be bound to be biased and unfair.
2. The evidence found to support the BIR findings had been cherry-picked. (It was based on one scientific experiment that had purportedly found a link between RF radiation and the induction of cancer in laboratory mice and another which linked DNA breaks in the brain cells of rats with RF.).
3. Repeats of both experiments by other scientists failed to find any evidence either for the development of tumours or damage to brain cells. They did find flaws in the original methods and one of the original experimenters has been investigated for scientific misconduct. In other words the BIR evidence had been based on poor science.
4. The BIR did not take on board the findings from many other experiments, nor the nullified results from the repeated attempts at the experiments they had regarded as crucial. It was selective and unbalanced.

BIR is an example of bad science. It unfairly sets out to show, by being highly selective in its choice of evidence, that RF radiation is more dangerous than the authorities declare it to be. It unfairly recommends that safety levels should be reduced by many orders of magnitude. It caused a public scare, which continues to sow mistrust in public bodies such as the HPA.

The BIR findings were widely reported in the press. They would have alarmed the public and sowed distrust on government safety levels and of the safety guidance being provided for the public by the HPA.

There is no reason to doubt the safety guidance issued by the HPA. It is staffed by independent scientists. Its guidance is for the public and for the government, but is independent of the government. HPA scientists work in an open manner, which is to say that they are open to evidence from any quarter.

In summary the expert scientific groups working under government auspices,

such as, in the UK, the HPA, and, internationally, WHO and ICNIRP, are to be trusted. They work by fair means in an open manner.

They conduct original scientific work, which is peer reviewed, and carry out reliable reviews of the scientific evidence from other studies. There is no reason not to place confidence in our scientific public bodies.

The guidance on Wi-Fi radiation currently issued by the HPA [4] states "On the basis of current scientific information, exposures from Wi-Fi equipment satisfy international guidelines.

There is no consistent evidence of health effects from RF exposures below guideline levels and no reason why schools and others should not use Wi-Fi equipment."

## References

- [1] BioInitiative Report: <http://www.scribd.com/doc/9394830/Bioinitiative-Report-on-Health-effects-of-EMF-ELF-radio-frequency#fullscreen:on>
- [2] 'Bad Science', Ben Goldacre, Fourth Estate, 2008, ISBN 978 0 00 724019 7.
- [3] COMAR Technical Information Statement: Expert Reviews on Potential Health Effects of Radiofrequency Electromagnetic Fields and Comments on the BioInitiative Report, Health Physics: October 2009 - Volume 97 - Issue 4 - pp 348-356
- [4] <http://www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/UnderstandingRadiationTopics/ElectromagneticFields/WiFi/>

## Secure storage of chemicals



The Home Office is in the process of setting up a programme called *Secure Your Chemicals*, aimed at ensuring all holders and users of particular hazardous chemicals have effective systems to manage and monitor their stock. This applies to schools as well as industries and SSERC (together with

CLEAPSS in England), is working with the Home Office to produce some appropriate guidance.

This guidance is likely to confirm existing SSERC advice and should not, therefore, present any issues to well-

run science and D&T departments. The guidance will be made available on the SSERC website in a few months time, as soon as it is clarified, and schools are urged to look out for it.

It would be a good idea for schools to plan to carry out a thorough audit of

existing chemical stocks during the coming summer. We believe that a thorough audit could be timely in many respects but it will certainly allow schools to be confident that they meet the intentions of this programme. Remember, you can always contact us here at SSERC to resolve any issues an audit might raise.

The programme is likely to be publicised through a number of routes so you may find some local authority representatives or school governors enquiring about what actions schools might need to take.

## Used-battery fire

We have had a report of a fire in a used-battery recycling container in the stores of a government laboratory. The fire was put out using fire fighting appliances before the fire service arrived on site, but things would have been worse if the incident had happened outside of working hours.

The cause seemed to be disc-shaped lithium batteries short circuiting and generating heat.

Our advice is to prevent short circuits by wrapping insulating tape over terminals, or by doing a one-for-one swap by putting the old battery into the packaging the new battery comes out of and marking the package "USED – FOR DISPOSAL".

Of most importance - do not take new batteries out of their packaging and store them one on top of the other in a nice neat pile.

