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Selling science short

"Stabilised oxygen" that has no formula, "Detox patches that draw harmful toxins out of your body", a yoghurt that "optimises the release of energy from our diet". Every time you watch TV you are bombarded with adverts for products with miraculous claims like these and slogans such as "scientifically proven", "biofields" "chemical free". But how true are these claims?

Implausible products

I am part of a group of young scientists who thought these claims sounded implausible. We decided to hunt for the scientific evidence behind them and challenge the manufacturers to explain how these products work. To our surprise, we discovered that although company representatives were happy to try to answer our questions, not one was able to give us any scientific evidence to support their claims or put us in touch with anyone who could. The companies didn't seem to have ever expected to be questioned.

A hunt for evidence

Some of the products we investigated made miraculous claims, but had no plausible science to back them up. Tom Sheldon, a computer scientist, looked into a software program called Computer Clear, which claimed to curb the harmful effects of electromagnetic field (EMF) from your computer, strengthen the immune system and bring the body back to health. How? By running in the background of your computer and releasing 34 000 bioresonance patterns through the computer monitor which will rebalance your biofield.

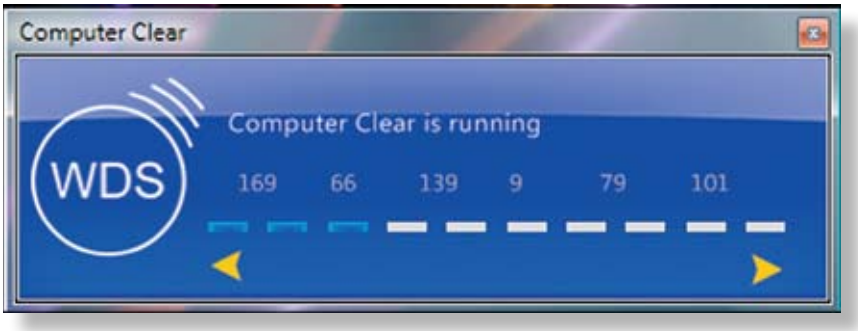
There is a chain of misinformation running through these claims. There is no scientific evidence to suggest EMF from your computer is harmful; *biofield* and *bioresonance* are not accepted scientific terms.

Tom rang up the manufacturer, World Development Systems, and questioned them about what evidence or published research they had to support the claims they had made about their product. Victor's (the inventor) response was that the evidence "*is anecdotal*" and "*the scientific bit is always, if you like, secondary and always a bit behind*". Tom also asked about the "biofield" and how Victor knew the

We all work with computers – but are they harming our 'biofields'?

program was emitting "bioresonance patterns". Could you measure them and detect them if Computer Clear was running on a computer?

"No, because the EMF still remains the same, it's constant; all we do is modulate our signals in a combination between the monitor and the CPU itself. EMF remains the same but the quality of the EMF from a human point of view changes."



'Computer Clear' claims to curb the harmful effects of electromagnetic field

Scientific evidence which has been published in a scientific journal has been peer-reviewed meaning it has been checked for validity, significance and originality and is more reliable than unpublished research.

If the quality of EMF changes you should still be able to measure it, but Victor responded that as we don't have the technology to measure it there is no way to know it works. As Tom said, "*This is the problem: no science, no theory, no evidence. The only support for the product is anecdotal, subjective, and unreliable.*" Victor claimed to have sold 340 000 copies worldwide which means over £13 million has been spent on a product with no supporting evidence, no working theory and no conceivable mode of action.

Customer Concern

Not all of the products we looked at were as far-fetched as this. Some of the claims were from supermarkets who had removed certain chemicals from their products. Ramla Ali, a teacher, wanted to find out why the Co-op had removed the flavouring monosodium glutamate from their own brand products. The Co-op claimed it was because of "*potential links to food intolerance and fresh concerns about children's diets*" but Ramla couldn't find any scientific studies that supported these claims. She also wanted to know if they would be banning tomatoes and parmesan which have naturally high levels of MSG (they aren't). Co-op said:

"We've removed it because of customers' concerns about health hazards."

"So not because you think that there are health hazards?"

"No. We removed it because of customer concerns."

So why are the customers concerned if there is no scientific evidence that MSG is harmful? Co-op did a survey which asked the customers if they were concerned about a possible (unproven) link with MSG and food intolerance. Most of us if asked this question would say yes as we wouldn't want something in our food that sounds dangerous, so unsurprisingly most people said yes. The Co-op is responding to a concern they have created and at the same time perpetuating a myth about food and chemicals which is not based on any evidence.

Tomatoes have naturally high levels of MSG

As one of our researchers, Kate Oliver, said, "*Instead of saying that the science doesn't matter only public perceptions do, companies have a duty to tell the truth as accurately as they can. Ignoring science and evidence about safety is an abuse of trust.*"

Crisps: Many crisps have the flavour-enhancer MSG, but not Co-op own brand ones.

So what can I do?

No qualifications are needed to do this. You just need an inquisitive mind and the tenacity to keep asking questions. Next time you see a claim for a product and it doesn't quite make sense, or you want to know more, phone up the company and ask them for their scientific evidence. Companies should be prepared to answer these questions and have the evidence to back up their claims, or put you in touch with someone who can. Sometime people do make genuine errors but if no-one is probing these mistakes, they will go uncorrected.

Look here!

We published some extracts from our experiences in the dossier *There goes the Science bit...* which can be downloaded at *www.senseaboutscience.org.uk/index.pho/site/other/175.*

See the article on peer review in Catalyst Vol 18 issue 1 *www.sep.org.uk/catalyst/download_article.asp?article_code=334*

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