

The truth behind the tabloids

Is press coverage of science becoming irresponsible hyperbole? **Owen Groves** examines whether the furore is for real.

Look around you. The list of things that might kill you is getting awfully long. If it's not the MMR vaccine, it'll be the HPV vaccine. If it's not the HPV vaccine, it'll be swine flu. If it's not swine flu, it'll be getting sucked into a black hole created by CERN. If you dodge the Swiss black hole of oblivion, a nuclear power plant will probably be exploding just down the road. And, if you are fortunate enough to avoid all of these various demises, global warming will probably get you. Ironically, many of the threats seem to be rearing their ugly heads fast and frequently from that bastion of progress: science itself. The advances intended to save and improve our lives seemingly do the opposite, or so the increasingly intense media scare-storms may lead you to believe. Is the furore necessary? Is it for valid public information on new and risky scientific endeavours? Or is coverage crossing the line into irresponsible hyperbole?

The media is invaluable for getting information out to the masses. Their stories have an enormous effect on public opinion. Nowhere is this more prevalent than in health matters. Unfortunately, there have been a number of media misfires in recent years.

The greatest health scandal of the last decade surrounded the combined measles, mumps and rubella (MMR) vaccine and its alleged link to autism, which broke as a story in 2001. The medical paper that originally purported the link was published by Dr. Andrew Wakefield a full three years before the story gathered full momentum. Precious few of the pieces mentioned the overwhelming evidence against a link. They also neglected to

take into account the fact that Dr. Wakefield's study was simply an anecdotal discussion of just 12 children; a tiny fraction of the millions of children vaccinated and the two people per 1000 of the population with autism.

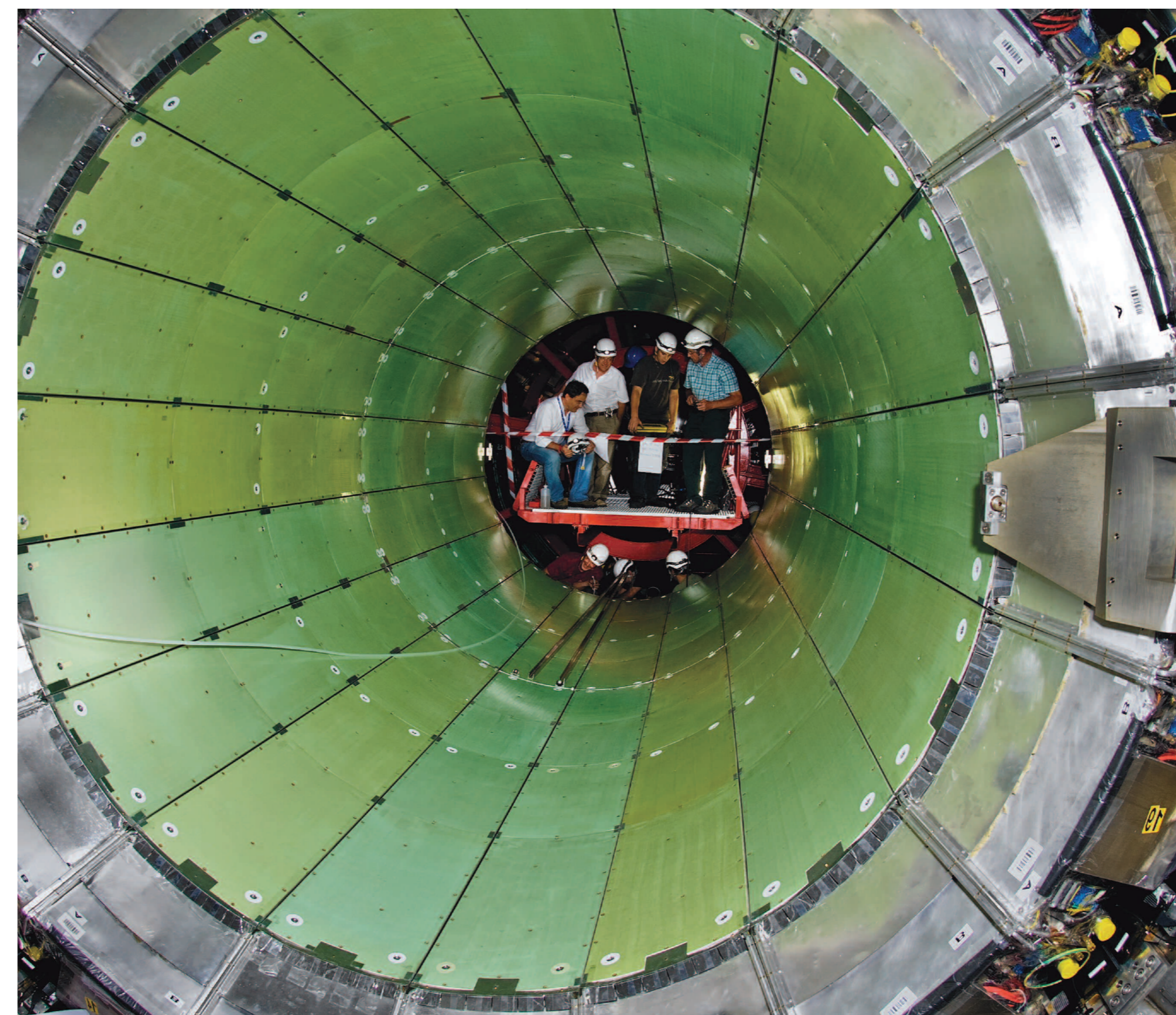
A single study with a sample so small is not capable of proving a link between two occurrences this common. However, the media put its full power behind the study, and in a stunning display of selective deafness, they began finding anti-vaccination lobbyists to support their new thesis. Coverage degenerated into a slew of sob stories, as mother after mother was 'betrayed' by science. Uptake of the vaccine fell by 20%, causing several epidemics and five reported deaths from an easily prevented disease.

In 2006, coverage turned. A powerful study found no link between measles RNA (similar to DNA) in children with regressive autism and the MMR vaccination. The vaccine was re-branded as safe and Dr. Wakefield was vilified for destroying its reputation and endangering a generation. The media's hero became the villain. But the irresponsible reporting was the real enemy, having used one man to cause an eight-year scandal.

This year, history threatened to repeat itself with the cervical cancer jab (HPV). In September, a schoolgirl died shortly after receiving the inoculation, triggering a cascade of stories questioning its safety. Three days later, it was revealed that the girl's tragic death was a coincidence, caused by underlying health problems. HPV was safe once more.

Right: construction of the LHC at CERN took scientists almost two decades

Far right: An anti-nuclear power poster



However, when Googling "HPV vaccine" two months later, the top result (behind the NHS website and Wikipedia page) was *The Guardian's* story, "Schoolgirl dies after cervical cancer vaccination".

Dangers remain in the public consciousness for a long time. The media cannot be blamed for this. Despite sometimes overreacting, it has a duty to warn the public over possible dangers. But newspapers can be blamed for the lasting impact of the stories. One *Daily Express* front page exclaimed "JAB 'AS DEADLY AS THE CANCER'". However, when Dr. Ben Goldacre questioned the quoted Dr. Diane Harper for his Bad Science column in *The Guardian*, she claimed, "I did not say that Cervarix was as deadly as cervical cancer." The entire story was based on a misquote.

Whilst the media rashly jumped to spurious conclusions on both occasions, they can be easily forgiven for how they initially reacted. It could be a matter of life and death. But once situations have been clarified, they struggle to release their views as fast as they should, turning to a mixture of misquotes and select-the-source-to-suit-the-conclusion-syndrome. The irresponsibility of media coverage in itself has become a matter of public health.

It's not just health that can become a matter of mortality when viewed through the prism of the press. In recent years the world of physics has become a world of Armageddons, with the European Centre for Nuclear Research (CERN)'s newest toy, the Large Hadron Collider (LHC), centre-stage.

The LHC is a particle accelerator that aims to smash protons together at higher energies than ever before achieved on Earth. Replicating conditions present during the Big Bang, it aims to search for the Higgs boson, which would help to explain the origin of mass in the universe. Safety concerns began to surface when three men - two non-physicists and one adversary of particle accelerators - attempted to halt its initiation. They believed that the collisions might create micro-black holes that would rapidly grow and consume the Earth. However, two safety reviews had already deemed the LHC safe. Any black holes formed would evaporate away through Hawking radiation. In any case, thousands of higher energy collisions occur above us in the atmosphere every day. No black hole apocalypse has yet occurred.

Nevertheless, as 'Big Bang Day' approached, slight statements of standard scientific uncertainty were

taken as an admission of apocalypse. *The Daily Mail* managed to print headlines like "Are We All Going to Die Next Wednesday?" and many major news sources followed suit. This culminated in the suicide of a 16-year old girl. When the LHC broke down just before its first collision, the relief was palpable.

Whilst not immediately as dangerous to public health as worries over vaccinations, the frenzy surrounding CERN still provoked strong feelings. Scientists received death threats, whilst the 'rock star' physicist Brian Cox said "anyone who thinks the LHC will destroy the world is a twat." But still people asked, "why take the risk?"

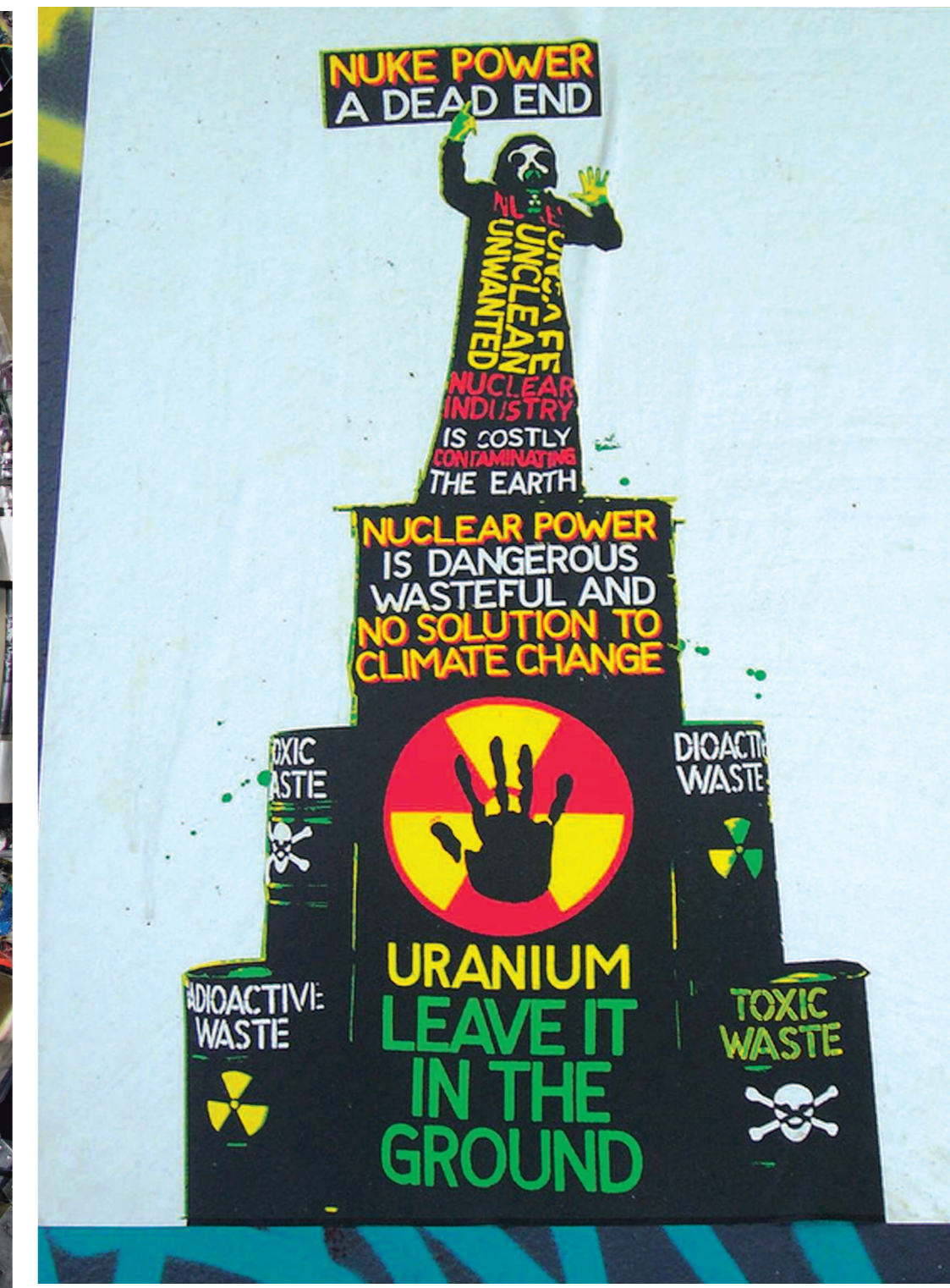
This point of view could be dangerous and unhealthy for human endeavour. Why shouldn't we support scientific endeavour if due care is taken? Science is about ploughing the furrows of knowledge in the name of advancement. We cannot be certain of what we will discover in the darkness of ignorance. We theorise, but we can't know unless we venture there. To constrain ourselves in this way could limit humanity's future advancement. No new drugs or vaccines would get tested; every good idea would be just an idea. Part of humanity's success is in its inquisitiveness.

Professor Cox's comment is more than just a display of bravado. The science community functions through intensive systems of peer review. It's how and why it works. When journals receive scientific papers, they undergo thorough checks for consistency before they are published. The same goes for large experiments. Before they

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receive funding they must apply to a panel, where scientific merit and safety is analysed.

As a community, scientists know what they are doing. This is uncomfortable for some people. Our society is one where everybody has a right to an opinion but this results in the belief that all opinions deserve to be heard on an equal level, despite lack of expertise. This does not hold in science. This is evident in the reporting of the planned new wave of nuclear fission power stations.



Whilst concerns about waste management are perfectly valid, at the very mention of the word 'nuclear', mushroom clouds seem to form next door to every 'nuclear' family in Britain. But there is a massive difference between our reactors and Chernobyl-type death traps. Newer and safer reactors favour passive safety systems with control rods held out of the reactor by electromagnets and considerably reinforced containment building walls. In the loss of power, the control rods simply drop down and this stamps out the nuclear reaction.

Another previous hazard was due to bubbles forming in the coolant. Bubbles accelerated the nuclear reactions, causing heating. This caused more bubbles to create a positive feedback loop that lets the reaction run out of control. British Magnox reactors use carbon dioxide gas as a coolant, eliminating positive feedback. These precautions ensure meltdowns are averted, and even if they aren't, they would be confined inside the plant itself.

In a recent report on 'The One Show', the increased safety was discussed by a white coat clad expert. Seconds later, we were told by a man, "well, he would say that". Of course he would: it's true. It is unsettling when an expert, with all his training,

can be dismissed in this way. It can confuse public opinion, cloud facts and reinforce the 'not in my backyard' fear of nuclear power.

Herein lies the essence of the problem. In the media, any opinion can be presented as having equal weight to those of an expert. Such a level of incongruity makes it difficult to decipher science fact from fear. Panic rules. There is a need for more discerning and considered reporting from journalists and public alike.

It also should be noted that previous errors lead to further work in order to prevent repeat occurrences, and to enhance safety now. Science is always improving and learning from itself, but in the news and public eye, it's a struggle to repair a reputation once damaged. Safety needs to be the focus rather than the danger.

The mainstream reporting on the cutting edge of science advances leaves a lot to be desired. The new vaccines and large scale experiments are not as scary as they are made out to be. In fact, all the scandals and scare stories should almost be indicative of their safety. With so many people searching for the next big threat, when something truly is worth worrying about we should know about it. Science is not as scary as it seems when the fear itself is more of a reason to worry. M