The only thing more powerful than the truth is fear

As I was thinking about what to write this month, I was invited by my dry cleaner to attend a protest in a nearby park against genetically modified food. This somewhat infuriated me as I know without doubt that GMO has helped millions around the world and had never killed anyone (although denial of these foods has), yet, as with nuclear power, opposition remains strong, especially in Europe.

My dry cleaner argued trying to tell me that 500,000 were killed in India due to GMO and, as you can imagine, there was no winning the argument. Mark Lynas, who I have quoted in previous posts has recently taken a hard stand against those who oppose GMO. Mark makes his position clear in his talk at Cornell University this past April where he opens with the following: "*I think the controversy over GMOs represents one of the greatest science communications failures of the past half-century. Millions, possibly billions, of people have come to believe what is essentially a conspiracy theory, generating fear and misunderstanding about a whole class of technologies on an unprecedentedly global scale.*"

It is no mistake that environmentalists like Mark have also changed their views on nuclear power and are now vigorously supporting it. The simple reason is that Mark and others like Stewart Brand and George Monbiot, are taking positions that are founded in science rather than a set of beliefs that may feel right, but cannot be supported by scientific evidence.

Most of the opposition to nuclear power is founded in fear – primarily the fear of radiation. However, scientific evidence continues to grow demonstrating the benefits of nuclear power while disproving widely held beliefs of many who oppose it.

For example, this past week (on May 23), a new study was reported on by the Canadian regulator (CNSC) looking at cancer rates near Canadian nuclear plants. Not surprisingly, once again the results were clear. No indication of any increases in cancer near nuclear stations relative to the rest of the province. "*The most important finding of this study is no evidence of childhood leukemia clusters in the communities within 25 km of the Pickering, Darlington and Bruce NPPs*."

Next I return to the study I wrote about last month published in the Journal of Environmental Science and Technology by Pushker A. Kharecha and James E. Hansen of the NASA Goddard Institute for Space Studies and Columbia University Earth Institute. They found that nuclear power has saved an estimated 80,000 lives annually – 1.84 million in all – since widely introduced in the 1970s and could save another 5 million if construction continues at a decent pace due to a reduction in air pollution. Nuclear power has also reduced carbon emissions by 64 Gt over the same period.

And finally UNSCEAR has now released the results of its latest study on the Fukushima accident. It clearly concluded "*Radiation exposure following the nuclear accident at Fukushima-Daiichi did not cause any immediate health effects. It is unlikely to be able to attribute any health effects in the future among the general public and the vast majority of workers*". But of even more importance this study also concluded that there are health effects from the Fukushima accident stemming from the stresses of evacuation and unwarranted fear of radiation.

So what does all this tell us? Looking at these three studies we can confirm that

i) operating nuclear power plants do not cause cancer to the residents of nearby communities from normal operations;

ii) over the past 40 years nuclear power has in fact saved

almost 2 million lives through a real reduction in pollution by not burning fossil fuels and its resultant health impacts; and finally

iii) that after the biggest nuclear accident in the last 25 years, radiation has not harmed any of the people of Japan and is unlikely to do so in the future.

Considering these kinds of results, why aren't we seeing this reported in the main stream media? With this kind of story there should be universal praise of nuclear power and strong support for its expansion. Frankly, if it were any technology other than nuclear that was reported to have saved millions of lives we likely would have seen it in the headlines at CNN, BBC and other mainstream media. So why are we primarily seeing these nuclear studies reported in trade magazines and blogs? Why is the world not blown away by this fantastic evidence of the benefits to our lives of nuclear power? As I was pondering these developments I came upon a chapter title in the book I am currently reading by Ben Goldacre called "Bad Science" (Good book by the way). The chapter title is "**Why Clever People Believe Stupid Things**". The chapter then goes on to discuss many of the things we have discussed in this blog before such as confirmation bias, seeing patterns where there are none and a host of other standard reasons why people tend stick to their beliefs in light of strong evidence that they should consider alternatives.

The reality is that some people will never change their view of nuclear power and will oppose it no matter what evidence is brought before them. But for those of us who are frustrated, there is hope. We are starting to see positive change. We have well known environmentalists seeing the benefits of nuclear power. This is now captured in the new documentary "Pandora's Promise" coming in June. Film maker Robert Stone is quoted as saying "*It's no easy thing for me to have come to the conclusion that the rapid deployment of nuclear power is*

now the greatest hope we have for saving us from an environmental catastrophe," Entertainment Weekly says "*the film is built around looking at an issue not with orthodoxy, but with open eyes*". (I know some of you have already seen it. I haven't seen it yet but I am looking forward to it).

Our story is strong. The message is positive and one of hope for the future. But overcoming fear is no easy task. Fear is a powerful emotion. It will take hard work, commitment – and most of all – time. But if we all persevere, the future is bright. The time has come to get the message out and show how much nuclear power contributes to society, and how necessary it is in a high energy and resource intensive world.