WN *Feedback*

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Hydrogenation
***Trans*-fats: a catastrophe and a scandal**

Access March 2009 Atherosclerosis paper by Fred Kummerow here
Access August 2009 Fred Kummerow petition to FDA here
Access February 2013 Am J Cardiovascular Disease Fred Kummerow paper here
Access September 2013 Fred Kummerow lawsuit against FDA here
Access January 2014 Gyorgy Scrinis on the trans-fats fiasco here
Access January 2014 Geoffrey Cannon on Ross Hume Hall here

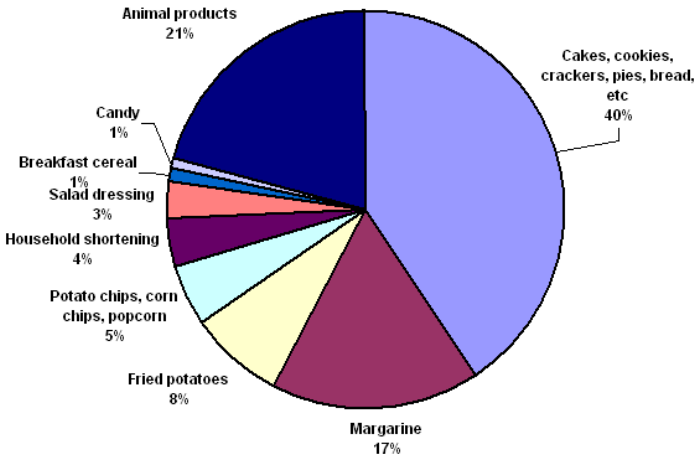


A hydrogenation reactor built in China for export to India. Machines like this generate artificial trans fatty acids, technically ideal for use in margarine and many other processed food products

From Fred Kummerow:

Reference to my work in your January issue (1,2) enables me to let your readers know that last August I filed a lawsuit against the US Food and Drug Administration (3). This states that the FDA's failure to ban the use of partially hydrogenated oils containing artificial *trans* fat in food for human consumption, is unlawful. This followed a petition I made to the FDA in 2009 that was ignored (4).

On 7 November last, the FDA announced its intention to withdraw the classification 'generally recognized as safe' from *trans*-fats, effectively acknowledging at last that there is no safe limit to the consumption of these toxic substances. This is a step in the right direction but does not, as has been reported, imply prohibition.



This FDA figure shows that a vast number of processed products remain sources of artificial trans fats in the US diet. Note that natural trans fats in meat and animal products are not harmful

Perhaps the FDA will in due course be courageous enough to acknowledge the overwhelming weight of evidence, and go to the root of the matter, and prohibit not *trans* fats, but the partial hydrogenation process that generates *trans* fats. But such a big step forward to reduction of rates of cardiovascular disease will benefit only the citizens of the US. The populations of the rest of the world, particularly in Asia, Africa and Latin America, are now being exposed to higher levels of partially hydrogenated vegetable oils in processed products. The scale of this development is indicated by the size of hydrogenation reactors, like the one shown at the beginning of this letter, made in China for export to India. *Trans* fats remain a global public health nutrition crisis of the greatest magnitude.

I am a biochemist who has been investigating *trans* fats since the 1950s, with a first preliminary publication in *Science* in 1957 (5). This began a journey of investigation which by the late1960s I believe proved beyond reasonable doubt that the main dietary issue with lipids and cardiovascular disease never was dietary cholesterol, and is not saturated fat, when these come from any type of fresh food, but is *trans* fat from processed food products. This is still not properly understood. The issue is not *trans* fat that naturally occurs in meat and animal products, as wrongly implied by the misleading 'pie chart' above. It is artificially created *trans* fats (6). Two of my recent publications are referenced here (7,8).

The tide has turned at last

To be precise, research conducted in my laboratory shows that dietary cholesterol is not a problem unless it is oxidised. But in the 1950s and 1960s the tide of consensus among influential scientists and policy-makers flowed in the opposite direction. Now the tide has turned. Indeed, Ancel Keys (1904-2004), seen as the father of the cholesterol–heart disease hypothesis, who lived to be 100 (a year older than I am now), was well known among his colleagues to enjoy rib-sticking meals of steak and

eggs. He eventually said: 'There's no connection whatsoever between the cholesterol in food and cholesterol in the blood. And we've known that all along. Cholesterol in the diet doesn't matter at all unless you happen to be a chicken or a rabbit' (9).
In 1968, after discussions I had with the then American Heart Association medical director Campbell Moses, the AHA prepared a revised dietary guide. This stated that consumption of partially hydrogenated vegetable oils should be reduced. In support of this view the revision stated: 'Partial hydrogenation of polyunsaturated fats results in the formation of *trans* forms which are less effective than *cis, cis* forms in lowering cholesterol concentrations. It should be noted that many currently available shortenings and margarines are partially hydrogenated and may contain little polyunsaturated fat of the natural *cis, cis* form.' But the revision was withdrawn, after representations from the Institute of Shortening and Edible Oils, the trade association of margarine manufacturers. All 150,000 copies of the revised guidelines were pulped.

A public health catastrophe

The deal made was that the AHA's eventual publication made no reference to *trans* fats or partial hydrogenation, and that the margarine and other manufacturers would quietly reduce the volume of *trans* fats in their products, which they did, from a level of about 40 per cent to about 27 per cent – still extremely high. This arrangement was made 'behind closed doors'. The public, and indeed United Nations agencies and government policy makers, remained in the dark and had little or no idea of *trans* fats and their toxicity until the 1990s.

In my view the evidence in the late 1960s on partial hydrogenation, *trans* fats and heart disease was good enough to justify revision of official and authoritative dietary guidelines and also – more important – to restrict by law, *trans*-fats in food supplies. The very slow progress since then, and since the early 1990s, and the reliance on voluntary agreements and labelling instead of statutory prohibition, is a long-running public health scandal in the US, one of the worst in our history.

For much of the rest of the world, where food product manufacturers can often do more or less as they like, it is a catastrophe. The very rapid increase in production and consumption of processed vegetable oils in economically developing countries predicts rapid rises in rates of premature and eminently preventable cardiovascular disease.

Beginning in 1945 I have worked at professorial level as a laboratory-based chemist and biochemist in US universities, at first Kansas and then Illinois, specialising in the investigation of lipids and their relevance to health and disease. I have served on many scientific advisory committees. I have worked on a collegiate basis with industry and remain on good terms with former students who are now industry

executives responsible for processing oils using hydrogenation, who explain to me that alternative methods are perfectly feasible but would cost more. The implication is that only a ban on hydrogenation will work, because this will create a 'level playing field' that will protect public health and also be fair to responsible manufacturers.

My belief, after 70 years research and thought, is that scientific evidence is necessary but not sufficient to bring about change and to protect public health. Politicians move when they are scared. This is why I petitioned the FDA, and after years of getting nowhere, I have sued the FDA. The FDA is currently asking for comments, and I am waiting to see what their final ruling will be.

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*Editor's note. Also please see Cannon G. Fred Kummerow. Telling it like it is about trans-fats. [Inspiration]. World Nutrition February 2014, **5**, 2, 169-173*

*Kummerow F. Hydrogenation. Trans fats: a catastrophe and a scandal [Feedback]. World Nutrition February 2014, **5**, 2, 188-191*

Big Food Watch. The Gates Foundation
Big Bill and Big Food. More



BIG FOOD WATCH

Access April 2011 PLoS Medicine David Stuckler et al on global philanthropy here
Access October December 2013 Big Food Watch Words for our sponsors here
Access January 2014 Claudio Schuftan on the Gates Foundation here





Bill Gates addressing the United Nations (left). Bill Gates and Warren Buffett enjoying a joke (right). Together they could plan to place up to $US 100 billion any time, anywhere they liked

Big Food Watch network member Claudio Schuftan writes:

I have come across three criticisms of my *Feedback contribution on the Bill and Melinda Gates Foundation,* in the December issue of *WN* (1). One is that comment on philanthropists has no place in a journal on public health nutrition. Two is that it is not fair to pick on Bill Gates. Three is that the world needs philanthropists, and the Bill and Melinda Gates Foundation is doing good work in the world.

The first criticism is perhaps one for the editor of *WN*. My answer is brief. In all matters of public policy and action, we need to know the sources of financial, other material and human support that shape eventual decisions. If the arms industry was funding candidates for the US presidency, this would be a cause for condemnation. In our field, the fact that the sugar industry is funding scientific research into sugar and health is a scandal that is now rightly being exposed (2). It is necessary, though insufficient, that writers and presenters are required to declare competing or conflicting interests. It is part of our job to know who pays the piper. More specifically, any feeling that it might be improper to enquire about 'philanthropic' funding I suggest stems from the idea that people who 'give away' their money are above and beyond scrutiny (3). *[Ed; We agree with these points].*

Who Bill Gates is



Bill Gates on Time, as a magnate in 1995, 1997 and 1999, and as a philanthropist in 2008. Far more powerful now, he has the same personality, mind-set and world-view now as he did then

Now for the second criticism. It is right to single out Bill Gates, because in our world – indeed, in the whole world – he is the pre-eminent philanthrocapitalist. *Time* magazine has celebrated the 'American way' ever since its foundation in the 1920s, and has glorified Bill Gates for 30 years. The caption of the 2008 cover of *Time* on the right says: 'A new creative capitalism can make the world better for all'.

He also has his own beliefs and style. He is not enigmatic or secretive. He can be surprisingly revealing. For example, the *Time* interview with him in 1997 (second from the left) has him responding to: 'Isn't there something special, perhaps even divine, about the human soul?' And: 'His face suddenly becomes expressionless, his... voice turns toneless, and he folds his arms across his belly and vigorously rocks back and forth in a mannerism that has become so mimicked at Microsoft that a meeting there can resemble a round table of ecstatic rabbis.' And: 'I don't have any evidence on that', he answers. 'I don't have any evidence of that'. And then 'Just in terms of allocation of time resources, religion is not very efficient. There's a lot more I could be doing on a Sunday morning.' He is a material person. This is the kind of answer that could be expected from a software engineer, which is how Bill Gates started out.

The other two *Time* cover features, from 1995 and 1999 (left and next to right), profile him as a relentless and ruthless businessman. 'Master of the universe', the headline on the earlier cover, was prescient. It is on record that in business Bill Gates consistently tended to react with contempt and derision when anybody expressed views that were different from his, intimidating his colleagues at Microsoft, and bamboozling US judicial investigations into Microsoft's monopoly on software operating systems. This is of course a common trait of entrepreneurs who climb over technical and human obstacles on their way to the top of the money and power tree.

With Steve Jobs, and very many other electronics people much less rich or famous, Bill Gates has transformed the way we are in the world. For those with access to electronic communication, Marshall McLuhan's vision of the global village has come into being. But does this make Bill Gates a fit person to control the world's leading foundation whose mission is to protect and improve world health?

Bill calls the shots



Four more Bill Gates covers, three with Melinda Gates, and two with Warren Buffett, published (left to right) in 2002, 2007, and 2010; and Bill by himself up there with heads of state in 2011

Bill Gates has personal direct command of more money than anybody else in the world. For 30 years he has also been exceedingly powerful and famous, first featuring on the cover of *Time* magazine in 1984 (pictured below) and at least 10 times in all. The covers of other magazines shown above, seek to explain the Bill and Melinda Gates Foundation (2002); explain his plans to transform Africa and China (2007 and 2010); and position his place in the world as estimated by a leading US money and power journal (2011). *Foreign Policy* magazine has made him with Warren Buffett the number 1 'global thinker' for 'preaching a breathtaking new gospel of how capitalist riches can solve the world's problems… as the world's states falter' (4).

Foundations named after tycoons like Ford and Rockefeller are directed by executives who are usually not family members, as is the recently founded Robert Wood Johnson Foundation. By contrast, its website states that the Gates Foundation is 'driven by the interests and passions of the Gates family'. This first means Bill Gates. He is aged 55, with a personal wealth estimated by the Bloomberg Rich List in 2013 at $US 72.7 billion. In 2013 *Forbes* magazine made him the world's number 6 most powerful person, below the presidents of Russia and the US, the leader of China, Pope Francis I, and the prime minister of Germany; way above fellow US philanthropist Michael Bloomberg (29), UN secretary-general Ban Ki-moon (32), Bill Clinton (43), and WHO director-general Margaret Chan (59). His wife Melinda is aged 49. She previously worked as a Microsoft general manager. In 2013 she was identified as the world's number 3 most powerful woman; below the presidents of Germany and Brazil, and above Michelle Obama and Hillary Clinton.

Bill's father William, who is 88, is co-chair with Bill and Melinda of the Foundation. The Foundation trustees are Bill and Melinda. Its 15 directors include 12 non-family members including fellow multi-billionaire and Bill Gates friend Warren Buffett, of whom 9 are from the US, 2 are South African and 1 is an Irish national. There is nobody from a 'recipient country'. With all due respect to Bill Gates's father, friends, fellow-directors and advisors, there are two people who are fully hands-on in charge of Gates Foundation principles, policies, strategies and actions. This is well-known to all who experience how the Foundation is directed. These are Bill and Melinda Gates.

Gates does not give money away



Four more Times covers, the first one 30 years ago in 1984; next are 1996, 1998 and 2010. In 2014 Bill Gates is still the chairman of Microsoft as well as masterminding the Gates Foundation

The Gates Foundation has done good work. I do not believe it was set up as a tax dodge, though it is surprising that the US authorities permit such a huge initiative to be controlled by the benefactor who is also the beneficiary from shareholdings, with his wife and father. Also Bill Gates is no doubt sincere, and there is nothing wrong in enjoying oneself while undertaking good works.

But the Gates Foundation does not, as most people think, 'give away money', in any normal sense of this term. It holds tightly on to control of its funds, in ways that in reality make many of those who receive Gates grants, its employees and servants. It specifies its areas of interest, as charities normally do. But also, Gates fairly rigidly operates a 'we will fix it', money-driven policy, which can work well with projects such as vaccination against viral diseases and nutrient supplementation. Those in need may well take the money whether or not they agree with the policies, which can bewilder, stupefy and demoralise locally-based professionals with permanent primary health care responsibilities. Such silver-bullet top-down policies and programmes also distract attention and drain resources from necessarily complex public health programmes, or else simplify them so that they lose most meaning and purpose.

Most public health and nutrition concerns are necessarily complex. Examples include alleviation of food insecurity and the sustained protection and improvement of nutritional status especially of populations in Asia, Africa and other less-resourced parts of the world rendered vulnerable and impoverished by old and new forms of colonialism and odious political and economic policies. Gates is surely impeding public health nutrition, certainly in all ways that empower the people most affected and that are genuinely sustainable.

Gates Foundation dictation of policy and practice increasingly distorts programmes worked out within UN and other agencies and organisations and may even overturn them. To a man whose career and success has told him that he is always right, that anybody with differing views is always wrong, and that anybody with opposing views must be blocked, this would not matter. The rest of us see Bill and Melinda Gates attempting, with considerable success, to dictate world health policy and practice.

This is done using the style that Bill Gates used to dominate the software business, in any area that interests them or that makes them feel passionate, at the invitation and with the connivance of elected politicians and of public servants.

The more money that Gates puts into UN projects and programmes influenced or controlled by Foundation executives, the greater the number of public servants who become disillusioned, disgusted or demoralised, and who in effect work for Gates while remaining in their posts, or else who leave the UN. Also, the greater is the tendency for UN member states to reduce their contributions to the affected UN agencies and dilute their interest in the UN process, on the grounds that 'we can leave it to Gates'. This suits the US and supportive UN member states, because the interests and passions of the Gates family are much the same as those of the US government as evident for example in the policies and programmes of the US Agency for International Development (USAID). The main difference is that in its approaches and actions, the Gates Foundation is less careful and more aggressive than any accountable organisation could be. The charge against the Bill and Melinda Gates Foundation is that it has become a monstrous creation in our midst.

Transnational charity



Bill Gates giving his deposition and testifying in 1998 at the US judicial hearing on Microsoft monopolistic practices, at left. At right, he is in full flow at a meeting held to plan saving the world

As I said in the previous issue of *WN*, the Gates Foundation's very large holdings of shares in Coca-Cola and McDonalds (1,3) identify it as a multinational corporation, albeit run not for profit, which to me aptly puts it in the category of Big Food. Most people agree, some with regret, that the world needs philanthropy and charity. But are justice, equity, human rights and world health served by philanthrocapitalism as practiced by the Gates Foundation? This is a whole different question.

There are also concerns about Big Bill himself, as any Gates watcher may tell you. On the left above, he is seen during the judicial hearings on Microsoft's alleged determination to monopolise software and even the internet itself. His demeanour as he looks away while declaring his testimony, drinking from a can (hard to tell but it looks like Coke™), and generally acting the boor, says a lot about his character. He is older and wiser now, but when he gets going in addresses to the World Health Organisation, the World Economic Forum and other venues, he has, as seen, right, a tendency to make strange arm gestures. Perhaps he should go easy on the Coke™ .

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Human size

The biology of why it is best to be small

Access March 2011 Thomas Samaras on human size here
Access 2012 Nutrition and Health Thomas Samaras on human size here
Access March 2013 What do you think? column on human size here
Access August-September Thomas Samaras, Geoffrey Cannon on human size here
Access January 2014 What do you think? column on human life here



We tend to overlook the fact that many great people are small. Left to right are Voltaire, Immanuel Kant, General Vo Nyugen Giap, Aung San Sui Kyi, and WHO director-general Margaret Chan

From Thomas Samaras, San Diego, US

In previous *WN* contributions (1,2) and in the January issue (3) it has been said that the main case for a physically small human race, relative to the average in high-income settings, is social, economic and environmental (1). May I state again, as summarised in Box 1, that a main case is also biological (4,5).

Box 1

Biological reasons to be small

Thomas Samaras writes: Here are just some of the biological reasons why it is better to be relatively small. *Extracted and summarised from (6).*

Reduced cell replication. Taller people have more cell replications during their lives, because they need to create and maintain taller, larger bodies. Thus, fewer cell replications are available in old age to maintain body tissues and organs. The telomeres (end sections) on our chromosomes indicate how many times cells have duplicated themselves. Shorter 90-year olds have longer telomeres, and so more potential replications than taller people.

Increased DNA damage. Taller people have a much higher incidence of DNA damage than shorter people. Much of the ageing process is related to DNA damage. Lifetime DNA damage increases incidence of cancer and reduces longevity. Total daily energy expenditure also promotes DNA damage through heat generation and associated free radical generation.

Increased cancer risk. Tall, heavier people have trillions more cells compared with short, lighter people. Cells are subject to stresses that damage them and promote cell replication. With more cell damage and replication, DNA errors increase in taller people.

Heart problems. A variety of CVD problems are related to being tall. These include: higher blood pressure, greater left ventricular mass, increased work load on the heart, atrial fibrillation, blood clots and lower heart pumping efficiency. A slow heart rate is considered protective, but centenarians are usually small with higher heart rates.

IGF-1, insulin levels and growth hormone. Long-lived people may have lower IGF-1 and higher insulin sensitivity. Lower growth hormone reduces IGF-1 levels. People with growth hormone deficiency are virtually free from cancer and diabetes. Very long-lived people tend to have relatively low IGF-1 and higher insulin sensitivity.

Lower SHBG and IGFBP-1. Lower levels of sex hormone binding globulin (SHBG) are related to all-cause, cancer and CVD mortality. SHBG declines with increasing insulin and IGF-1, Both factors are related to greater height and larger body size. IGFBP-1 tends to be higher in smaller individuals with lower weight and lower BMI

Relatively smaller organ size. Human hearts and lungs are proportional to body mass. But in taller people, the brain, liver and kidneys are smaller proportionately. Thus, most of the organs of taller people have a smaller functional capacity. Over a lifetime, as cell and DNA damage accumulate, shorter people have a greater cell reserve going into older ages.

A recent paper of mine summarised above makes this point (6). Apart from cardiovascular disease, the epidemiological evidence favouring small body size is conclusive. The biological mechanistic evidence is also impressive. Some epidemiologists do not agree with my general conclusions, as these relate to human biology, and I would like to know why. Also, as far as I know, biochemists have not come up with findings that refute the work briefly summarised above, which comes from many sources. If people come to see that future generations in their families and communities will be personally better off if relatively small, they will surely become more interested in the wider reasons that should concern us all.

Alternatively, if there is a general case for the biological benefits of relatively large human size – say, the size that is now the average in economically developed countries – can we know what this is, please.

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Editor's note

The very important topic of human size needs full discussion and debate. *WN* will publish reasoned contributions making the case for relatively large human size, or against relatively small human size, on any or all social, economic, environmental and also biological grounds – ideally, all taken together. The terms 'large' and 'small' need delineation, of course. Small children who are very small and who are infested or infected or liable to be so, clearly are in danger, though whether that means they should be fed so as to accelerate their growth is moot. This is an area of fundamental importance in public health and nutrition, most of all in the global South. Proposals please to wn.theeditor@gmail.com

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How to respond

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