

To the interested reader

Dear Sir/Madam

### **Why do we have to have Genetically Modified Organisms?**

I am fortunate enough to live in a society of free speech, free access to information and a right to question the actions of a democratically elected government. I have always looked towards science as a way to better know and understand the world. It seems that the more I learn the less I realise I actually do understand. I believe this to be true of most people. I also believe that science is vitally important in the development of agriculture. In fact not so many years ago I would have been a supporter of technology such as GMOs (Genetically Modified Organisms). I now farm using Biodynamic farming methods. Not wishing to pass judgement regarding a science I knew very little about, I began researching GMOs and the company that are to be running trials of Round Up Ready Canola here in Western Australia. Having researched, I am now totally opposed to any trial of any type of GMO. I have endeavoured to summarise my research into salient areas of interest in order for you and the general public to better understand the reasons for my decision to oppose GMOs and ask that you make up your own mind.

Before starting please remember the following Quotes:

*"If you control the oil you control the country; if you control the food you control the population." -- Henry Kissinger*

*"Monsanto should not have to vouch for the safety of biotech food," said Phil Angell, Monsanto's director of corporate communications. "Our interest is in selling as much of it as possible. Assuring its safety is the FDA's job."*

*Monsanto, Supreme Lobbyist at FDA  
New York Times Corporation, October 25, 1998*

### **The company involved in Western Australian Trials "Monsanto" a brief history:**

Monsanto, best know today for its agricultural biotechnology products, has a long and dirty history of polluting this country (US) and others with some of the most toxic compounds known to humankind. From PCBs to Agent Orange to Roundup, we have many reasons to question the motives of this company that claims to be working to reduce environmental destruction and feed the world with its genetically engineered food crops.

- Headquartered near St. Louis, Missouri, the Monsanto Chemical Company was founded in 1901. Monsanto became a leading manufacturer of sulphuric acid and other industrial chemicals in the 1920s. In the 1930s, Monsanto began producing polychlorinated biphenyls (PCBs). PCBs, widely used as lubricants, hydraulic fluids,

cutting oils, waterproof coatings and liquid sealants, are potent carcinogens and have been implicated in reproductive, developmental and immune system disorders.

- The world's centre of PCB manufacturing was Monsanto's plant on the outskirts of East St. Louis, Illinois, which has the highest rate of foetal death and immature births in the state. By 1982, nearby Times Beach, Missouri, was found to be so thoroughly contaminated with dioxin, a by-product of PCB manufacturing, that the government ordered it evacuated. Dioxins are endocrine and immune system disruptors, cause congenital birth defects, reproductive and developmental problems, and increase the incidence of cancer, heart disease and diabetes in laboratory animals.
- By the 1940s, Monsanto had begun focusing on plastics and synthetic fabrics like polystyrene (still widely used in food packaging and other consumer products), which is ranked fifth in the EPA's 1980s listing of chemicals whose production generates the most total hazardous waste.
- During World War II, Monsanto played a significant role in the Manhattan Project to develop the atom bomb.
- Following the war, Monsanto championed the use of chemical pesticides in agriculture, and began manufacturing the herbicide 2,4,5-T, which contains dioxin. Monsanto has been accused of covering up or failing to report dioxin contamination in a wide range of its products.
- The herbicide "Agent Orange," used by U.S. military forces as a defoliant during the Vietnam War, was a mixture of 2,4,5-T and 2,4-D and had very high concentrations of dioxin. U.S. Vietnam War veterans have suffered from a host of debilitating symptoms attributable to Agent Orange exposure, and since the end of the war an estimated 500,000 Vietnamese children have been born with deformities.
- In the 1970s, Monsanto began manufacturing the herbicide Roundup, which has been marketed as a safe, general-purpose herbicide for widespread commercial and consumer use, even though its key ingredient, glyphosate, is a highly toxic poison for animals and humans. In 1997, The New York State Attorney General took Monsanto to court and Monsanto was subsequently forced to stop claiming that Roundup is **"biodegradable"** and **"environmentally friendly."**
- Monsanto has been repeatedly fined and ruled against for, among many things, mislabelling containers of Roundup, failing to report health data to EPA, and chemical spills and improper chemical deposition. In 1995, Monsanto ranked fifth among U.S. corporations in EPA's Toxic Release Inventory, having discharged 37 million pounds of toxic chemicals into the air, land, water and underground.
- Since the inception of Plan Colombia in 2000, the US has spent hundreds of millions of dollars in funding aerial sprayings of Monsanto's Roundup herbicides in

Colombia. The Roundup is often applied in concentrations 26 times higher than what is recommended for agricultural use. Additionally, it contains at least one surfactant, Cosmo-Flux 411f, whose ingredients are a trade secret, has never been approved for use in the US, and which quadruples the biological action of the herbicide.

- Not surprisingly, numerous human health impacts have been recorded in the areas affected by the sprayings, including respiratory, gastrointestinal and skin problems, and even death, especially in children. Additionally, fish and animals will show up dead in the hours and days subsequent to the herbicide sprayings.
- In the 1980s and early 1990s, Monsanto was behind the aggressive promotion of synthetic Bovine Growth Hormone, approved by the FDA for commercial sale in 1994, despite strong concerns about its safety. Since then, Monsanto has sued small dairy companies that advertised their products as free of the artificial hormone, most recently bringing a lawsuit against Oakhurst Dairy in Maine.
- In August, 2003, Monsanto and its former chemical subsidiary, Solutia, Inc. (now owned by Pharmacia Corp.), agreed to pay \$600 million to settle claims brought by more than 20,000 residents of Anniston, AL, over the severe contamination of ground and water by tons of PCBs dumped in the area from the 1930s until the 1970s. Court documents revealed that Monsanto was aware of the contamination decades earlier.

### **A More in-depth look at Monsanto's Environmental Record**

In the 1930's Monsanto bought the company that invented PCBs and became the source of all PCBs in the United States. (PCBs) is the acronym for Polychlorinated biphenyls which are complex chlorinated compounds.

In the Washington Post article (Jan 1, 2002) "Monsanto Hid Decades Of Pollution PCBs Drenched Ala. Town, But No One Was Ever Told" a grim story of Monsanto's treacherous behavior in Anniston Alabama was revealed. It is summed up in this chilling paragraph: "They also know that for nearly 40 years, while producing the now-banned industrial coolants known as PCBs at a local factory, Monsanto Co. routinely discharged toxic waste into a west Anniston creek and dumped millions of pounds of PCBs into oozing open-pit landfills. And thousands of pages of Monsanto documents -- many emblazoned with warnings such as "CONFIDENTIAL: Read and Destroy" -- show that for decades, the corporate giant concealed what it did and what it knew."

#### **Anniston Alabama**

*"On the west side of Anniston, the poor side of Anniston, the people ate dirt. They called it "Alabama clay" and cooked it for extra flavor. They also grew berries in their gardens, raised hogs in their back yards, caught bass in the murky streams where their children swam and played and were baptized. They didn't know their dirt and yards and bass and kids -- along with the acrid air they breathed -- were all contaminated with chemicals. They didn't know they lived in one of the most polluted patches of America."*

**"In 1966, Monsanto managers discovered that fish submerged in that creek turned belly-up within 10 seconds, spurting blood and shedding skin as if dunked into boiling water. They told no one. In 1969, they found fish in another creek with 7,500 times the legal PCB levels. They decided 'there is little object in going to expensive extremes in limiting discharges.'"**

**"Sylvester Harris, 63, an undertaker who lived across the street from the plant, said he always thought he was burying too many young children. 'I knew something was wrong around here,' he said."**

The article must have been a severe blow to Monsanto PR since it had previously stated in response to a 1994 *Sierra* magazine article that "Monsanto has never concealed any hazard of PCBs" and "Claims of 'cover-ups' and 'sacrificing 'life itself' to corporate profits' are untrue and out of touch with Monsanto's way of doing business". This comment makes sense in light of a 1969 Monsanto directive to "a committee the company formed to address controversies about PCBs", it was to have "only two formal objectives: 'Permit continued sales and profits' and 'protect image of . . . the corporation'(1). " We can't afford to lose one dollar of business" an internal memo concluded. The next year Monsanto secretly agreed that "any written effluent level reports [on PCBs] would be held confidential by the Technical Staff and would not be available to the public until or unless Monsanto released it". And that was apparently the final word because nothing changed for decades. According to the WP article the public did not become fully aware of the problem until 1993 when, "after a local angler caught deformed largemouth bass [in a local creek] ... the first advisories against eating fish from the area" were issued. This was "27 years after Monsanto learned about those bluegills sliding out of their skins". Monsanto's PCB monopoly had been netting them \$22 million dollars a year.

**"Today, parts of Anniston are so contaminated that residents have been told not to grow vegetables in the soil, kick up dirt, eat food, chew gum or smoke cigarettes while working in their yards. 'Our children have to play in the streets, on the sidewalks, because they can't play in the grass because it's contaminated,' says resident David Baker. 'We have to wear masks if we cut our grass. Where else in the United States of America are people doing that?'"**

**"In my judgment, there's no question this is the most contaminated site in the U.S.," says Dr. David Carpenter, a professor of environmental health at the State University of New York in Albany.**

Over twenty thousand Anniston residents were part of the suit which resulted in a \$700 million fine. On February 22, 2002, Monsanto was found guilty of "negligence, wantonness, suppression of truth, nuisance, trespass, and outrage." Under Alabama law, the rare claim of outrage requires conduct **"so outrageous in character and extreme in degree as to go beyond all possible bounds of decency so as to be regarded as atrocious and utterly intolerable in civilized society"**. The settlement of the case, however, included "no admissions of wrongdoing" by Monsanto.

By the way, Monsanto also callously dumped 40 to 50 *tons* of mercury, and possibly also lead, down company storm sewers the *Anniston Star* investigative reporting found.

### **Pollution Déjà Vu**

Anniston wasn't the only place where toxics were dumped for years by Monsanto; Sauget, Illinois near the banks of the Mississippi river is another notable case (2). In fact Greenpeace alleges that "Monsanto has been identified by the U.S. Environmental Protection Agency as

being the 'potentially responsible party' for no fewer than 93 contaminated sites (Superfund Sites) in the U.S". See also Chemical giant ignored in pollution scandal about the case of a Missouri town, Times Beach, evacuated in 1983 due to dioxin and pcb contamination. Also see The Little Town That Whipped Monsanto.

It's also recently been revealed that Monsanto followed a similar pollution path in the UK's south Wales. "Evidence has emerged that the Monsanto chemical company paid contractors to dump thousands of tonnes of highly toxic waste [PCBs] in British landfill sites, knowing that their chemicals were liable to contaminate wildlife and people." A secret Monsanto report on the subject which has emerged in court said that, in response to the prospect of revelation, "The alternatives are [to] say and do nothing; create a smokescreen; immediately discontinue the manufacture of Aroclors; respond responsibly, admitting growing evidence of environmental contamination ...' A scrawled note at the end of the document says: 'The Big Question! What do we tell our customers ... try to stay in business or help customer's clean up their use?'. Additionally, "Monsanto stopped producing PCBs in the US in 1971, but the UK government, which knew of the dangers of PCBs in the environment in the 1960s, allowed their production in Wales until 1977". However "complete cessation did not occur until 1986" (Note: although Monsanto ceased production of liquid aroclor (PCBs) at its Anniston plant in 1971 and solid aroclor in 1972 it continued production at its Sauget, Ill. plant until 1977 for use in electrical systems such as capacitors and transformers). "This is one of the most contaminated sites in Wales and it is a priority to remediate because it is so close to habitations,' said John Harrison [Environment Agency Wales'] manager of the Taff/Ely region.". Like Anniston in the U.S. Monsanto's Brofiscin is "the most contaminated place in Britain".

The amount of PCBs dumped into two "unlined and unsealed" quarries, the Brofiscin Quarry and the Maendy Quarry, is more than 120,000 tonnes according to this article in The Ecologist. An additional five quarries were also used. Additionally the "Brofiscin stands above an underground reservoir that might well in the future be used as a public water supply."

"A previously unseen government report read by the Guardian shows that 67 chemicals, including Agent Orange derivatives, dioxins and PCBs which could have been made only by Monsanto, are leaking from one unlined porous quarry that was not authorised to take chemical wastes".

A major witness to the events, Douglas Gowan, who is questioning why the government Environment Agency is about to let Monsanto off the hook states that "I have been personally threatened, and my home invaded, necessitating police protection. All I have tried to do is to provide the evidence I have in the best public interest. Instead of that happening a seeming cover up is occurring, involving obstruction of justice, and the question begged is, why?".

### **PCB Ubiquity and Toxicity**

But PCBs are now found everywhere and in everyone and are virtually indestructible. They travel freely on wind and water and right on up the food chain (note: although "From 1929-1977 [when PCB manufacture was banned], Monsanto Company, [was] the sole manufacturer of PCBs in the United States, [and] produced 700,000 tons of PCBs" they are not solely responsible for their worldwide distribution. Monsanto PCB customers like General Electric and Westinghouse also released massive amounts into the environment - a timeline). Indeed in Our Stolen Future, Dr. Theo Colborn, Dianne Dumanoski and John Peterson Myers note that PCBs "might be found virtually anywhere imaginable: in the sperm of a man tested at a

fertility clinic in upstate New York, in the finest caviar, in the fat of a newborn baby in Michigan, in penguins in Antarctica, in the bluefin tuna served in a sushi bar in Tokyo, in the monsoon rains falling in Calcutta, in the milk of a nursing mother in France, in the blubber of a sperm whale cruising in the South Pacific, in a wheel of ripe brie cheese, in a handsome striped bass landed off Martha's Vineyard on a summer weekend. Like most persistent synthetic chemicals, PCB's are world travelers." . For more including charts see IPCS - WHO Environmental Levels and Human Exposure. In fact along with other environmental threats like climate change (global warming) they may even lead to the extinction of polar bears.

In humans they cause or are a precursor to a wide range of severe ailments including chloracne. In fact "*PCB exposure increases the risk of almost all major diseases, including heart disease and diabetes,*" says Carpenter. And although Monsanto publically downplays the toxicity of PCBs (though the record shows that *privately* Monsanto Knew about PCB Toxicity for Decades) "within the objective scientific community and within the government bodies, there is no debate at all".

Alarm is being raised about the effects of PCBs and other Persistent Organic Pollutants (POPs) on native peoples in Russia, Greenland and Canada. Though normally boys slightly outnumber girls, evidence has been emerging that families that survive on the traditional indigenous diet of sea food are changing. It turns out that the hormone mimicking effects of these industrial pollutants are causing a radical suppression of male births. "In the north of Greenland, near the Thule American airbase, only girl babies are being born to Inuit families".

Furthermore their ban was not the end of PCBs, "Due to the long service life of this equipment [electrical transformers], considerable amounts of PCBs are likely to remain in use for many years".

### **The Solutia Solution**

Monsanto's response is to claim that since it spun off a smaller affiliate, Solutia (in 1997), then merged with Pharmacia (in 2000) and then two years later sort of de-merged, it is not the same company that is responsible for Anniston.

Says the Farm Industry News, "Monsanto, which has long resided in the crosshairs of public scorn and scrutiny, appears to have dodged at least one bullet by spinning off its industrial chemical business into a separate entity called Solutia a couple of years ago. Solutia has since been hammered by lawsuits regarding PCB contamination from what were once called Monsanto chemical plants in Alabama and other states".

"Solutia inherited Monsanto's liabilities as a result of 'one-sided negotiations' with Monsanto, according to a court document filed by Jeffrey Quinn, Solutia's general counsel and chief restructuring officer. Monsanto spun off its chemical business, naming it Solutia in 1997, when it decided to focus on its agricultural products. As part of the spinoff, Monsanto put all the liabilities both known and unknown that it had obtained for its nearly 100 years doing business into Solutia, which then became a publicly traded company".

"Some cynically say the company got its name because it was the solution to many of old Monsanto's problems", argues Solutia's Glenn Ruskin, "its spinoff from Monsanto Co. unjustly saddled it with hundreds of millions of dollars in environmental cleanup costs and other liabilities.... '(Monsanto) sort of cherry picked what they wanted and threw in all kinds of cats and dogs as part of a going-away present,' including \$1 billion in debt and environmental and litigation costs accrued by Monsanto and Pharmacia over a century of manufacturing". In addition to PCBs the article mentions two Texas asbestos lawsuits

inherited from Monsanto involving "about 570 asbestos actions involving 3,500 to 4,500 plaintiffs."

"Solutia has spent approximately \$100 million each year to service legacy liabilities that it was required to accept at the time of the spin-off from Monsanto,' says Solutia chairman, president and CEO John Hunter". In 2003 Solutia filed for bankruptcy.

Monsanto's three shell game hasn't fooled everyone though, "despite this self-induced identity crisis surrounding the company name Monsanto, a quick look at the people involved reveals that essentially the same cast of characters has been with the (chemical) company since it was (old) Monsanto". Additionally "the new Monsanto states in its 2001 proxy statement that the new Monsanto (not Pharmacia) is responsible for the liabilities of Solutia, Inc.(old Monsanto's subsidiary) in the event Solutia, Inc. cannot meet its obligations."

Update: In August on 2007 an agreement was tentatively reached wherein Monsanto's financial stake in Solutia would be reduced from 20% to 17% in exchange for Solutia's dropping of its claims against Monsanto. However "Equity holders said in court documents filed Aug. 7 that the settlement 'repeats the same theme that propelled Solutia into bankruptcy in the first place: a sweetheart deal that benefits Monsanto while permanently burdening Solutia with hundreds of millions of dollars in legacy liabilities, which it played no role in creating ... 'Monsanto created Solutia as a vehicle to dump massive environmental liabilities generated decades before the spinoff.

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Asks the Environmental Working Group "*If Monsanto hid what it knew about its toxic pollution for decades, what is the company hiding from the public now? This question seems particularly important to us as this powerful company asks the world to trust it with a worldwide, high-stakes gamble with the environmental and human health consequences of its genetically modified foods*".

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(1) Here one can see another example of Monsanto's concern with damage control and managing its image with regard to increasingly negative PR resulting from its PCB operations in general. With the Toxic Substances Act due to become law the following year and with political and public pressure mounting, Monsanto wrote in 1975: "*Principally, Monsanto must not be viewed as being forced into a decision to withdraw from PCB manufacture by either government action or public pressure. Rather, key audiences must perceive Monsanto as having initiated responsible action in a manner consistent with its past reputation and practices.*" Well yes, it was consistent.

(2) Scott McMurray, "Denying Paternity: Monsanto Case Shows How Hard It Is to Tie Pollution to a Source; PCBs Taint Site Where Firm Used to Produce Them, But it Doesn't See a Link," Wall Street Journal June 17, 1992, pg. A1.

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"*Stark denials in the face of documented evidence to the contrary have been corporate policy at Monsanto and GE for decades.*" Eric Francis author of *Conspiracy of Silence*.

"For years, these guys said PCBs were safe, too. But there's obviously a corporate culture of deceiving the public." Mike Casey of the Environmental Working Group

## **GM Crops Sold as the Solution to the World Food Shortage**

### **Exposed: the great GM crops myth.**

An article by Geoffrey Lean, Environment Editor for the Independent, 20 April 2008

Genetic modification actually cuts the productivity of crops, an authoritative new study shows, undermining repeated claims that a switch to the controversial technology is needed to solve the growing world food crisis.

The study – carried out over the past three years at the University of Kansas in the US grain belt – has found that GM soya produces about 10 per cent less food than its conventional equivalent, contradicting assertions by advocates of the technology that it increases yields.

Professor Barney Gordon, of the university's department of agronomy, said he started the research – reported in the journal *Better Crops* – because many farmers who had changed over to the GM crop had "noticed that yields are not as high as expected even under optimal conditions". He added: "People were asking the question 'how come I don't get as high a yield as I used to?'"

He grew a Monsanto GM soybean and an almost identical conventional variety in the same field. The modified crop produced only 70 bushels of grain per acre, compared with 77 bushels from the non-GM one.

The GM crop – engineered to resist Monsanto's own weedkiller, Roundup – recovered only when he added extra manganese, leading to suggestions that the modification hindered the crop's take-up of the essential element from the soil. Even with the addition it brought the GM soya's yield to equal that of the conventional one, rather than surpassing it.

The new study confirms earlier research at the University of Nebraska, which found that another Monsanto GM soya produced 6 per cent less than its closest conventional relative, and 11 per cent less than the best non-GM soya available.

The Nebraska study suggested that two factors are at work. First, it takes time to modify a plant and, while this is being done, better conventional ones are being developed. This is acknowledged even by the fervently pro-GM US Department of Agriculture, which has admitted that the time lag could lead to a "decrease" in yields.

But the fact that GM crops did worse than their near-identical non-GM counterparts suggest that a second factor is also at work, and that the very process of modification depresses productivity. The new Kansas study both confirms this and suggests how it is happening.

A similar situation seems to have happened with GM cotton in the US, where the total US crop declined even as GM technology took over.



Monsanto said yesterday that it was surprised by the extent of the decline found by the Kansas study, but not by the fact that the yields had dropped. It said that the soya had not been engineered to increase yields, and that it was now developing one that would.

Critics doubt whether the company will achieve this, saying that it requires more complex modification. And Lester Brown, president of the Earth Policy Institute in Washington – and who was one of the first to predict the current food crisis – said that the physiology of plants was now reaching the limits of the productivity that could be achieved.

A former champion crop grower himself, he drew the comparison with human runners. Since Roger Bannister ran the first four-minute mile more than 50 years ago, the best time has improved only modestly. "Despite all the advances in training, no one contemplates a three-minute mile."

Last week the biggest study of its kind ever conducted – the International Assessment of Agricultural Science and Technology for Development – concluded that GM was not the answer to world hunger.

Professor Bob Watson, the director of the study and chief scientist at the Department for Environment, Food and Rural Affairs, when asked if GM could solve world hunger, said: "The simple answer is no."

### **GMOs The Health Effects** (Taken from a Soil Association of UK document)

It was often suggested by the advocates of GM crops that there should be no concerns about this issue because GM crop material is degraded during processing into feed and during digestion. (There are, for instance, significant secretions of nucleases, enzymes which break down DNA, along the gut.)<sup>1</sup> Until a couple of years ago, none of the published studies had detected transgenic (GM) DNA in the milk, eggs or meat of GM-fed animals.<sup>2,3,4,5</sup> Nevertheless, several of these studies found that plant chloroplast DNA from animal feed is present in milk, eggs and meat.<sup>2,3,4</sup> This plant DNA was not nuclear DNA, the DNA contained in the nuclei of cells which is where the novel genes ('transgenes') are usually inserted for making GM crops. It was instead the DNA that is found in the chloroplasts, the plant 'organelles' that photosynthesise and which are present in large numbers in plant cells.

Chloroplast DNA is vastly more abundant than nuclear DNA, since each plant cell can have thousands of copies of chloroplast genes but just two to four copies of each nuclear gene. Plant chloroplast DNA is therefore thought to be more detectable in animal products than nuclear DNA simply because of its greater abundance, not because it is less susceptible to breakdown during processing or digestion. It is therefore in fact likely that many studies were failing to detect GM crop ('transgenic') DNA in animal products and tissues because of its comparatively low level of presence and limitations in the sensitivity of the analytic methods being used, rather than because transgenic DNA does not actually make its way into animal products and tissues.

Since late 2005, however, three published studies by three different scientific teams and one unpublished study have actually detected transgenic plant DNA in animal tissues and milk. A Canadian team fed pigs and sheep Roundup Ready oilseed rape (Canola- the type soon to be grown in WA) and then examined various tissues from the animals. They found that a liver, a kidney and intestinal tissues from the pigs, and intestinal tissues from the sheep contained fractions of the transgenes.<sup>6</sup> In another study, Italian scientists fed piglets for 35 days on

Monsanto's GM maize (Mon 810). They subsequently found fragments of a transgene in the blood, liver, spleen and kidney of the animals.<sup>7</sup>

Another Italian research team, from the University of Catania, detected GM soya and GM sequences in shop-bought milk in Italy.<sup>8</sup> An unpublished study, carried out in the year 2000 at the University of Weihenstephan in Germany, also detected GM material (from GM soya and GM maize) in the milk of cows which had been fed large amounts of GM plants. The results of the study were published by Greenpeace in 2004.<sup>9,10</sup> The researcher has suggested that the DNA may have been a result of contamination of the milk by dust from the GM feed in the dairy. Whilst this is unproven, this points to a potential common source of contamination. One of the main concerns about GM crops is whether they will have negative effects on health. This was initially a theoretical concern. However, considerable scientific evidence has emerged over the last few years that has substantially developed our understanding and shows that there are indeed real health risks from genetic engineering.

There is now a worrying body of published, peer-reviewed scientific evidence from controlled animal studies carried out in many countries and by different parties (government, independent and company studies) that demonstrates that GMOs cause a wide range of serious unexpected health impacts. Evidence is also beginning to emerge that if GM crops are fed to animals, small amounts of GM material appear in the resulting meat and dairy products, and this had not been previously identified. Both of these issues raise serious human and animal health concerns about the use of GMOs in food, and also major ethical concerns about the fact that foods from GM-fed animals remain unlabelled. The findings also raise serious questions about the reliability of the government safety assessment and advisory procedures. With this evidence, the Soil Association of the UK believes that GM crops are unsafe and should not be used for food.

Do milk, eggs and meat from GM-fed animals contain GM material?

The use of GM feed and does not change or undermine the fact that the researcher found GM DNA in the milk. The Soil Association decided to also investigate this issue. We asked those farmers whose feeds we had found contained high levels of GM soya, if they would also provide samples of their milk or eggs for testing for the presence of GM DNA or GM protein. Two dairy farmers and one egg producer agreed to provide samples. Each farmer provided two samples of milk (from two different cows) or two samples of eggs, as well as another sample of feed to re-check the GM soya level. All samples were tested by Genetic ID in Germany. The soya in all three feed samples was found to be 100% GM. However, our tests did not detect any GM DNA or protein in any of the milk or egg samples. In several of the milk samples, plant DNA, including soya DNA, was detected, indicating the possibility that a very low level of undetected GM DNA may have been present. Subsequently, when we became aware of the Italian research which had detected GM DNA in shop-bought milk, we also carried out a similar, but smaller scale survey. Milk samples were collected from 10 different leading supermarket or corner shop chains. All of the samples were analysed using the same analytic technique used by the scientists from Catania, as well as by an in-house method. Again, no GM DNA or protein was detected, but several samples contained traces of plant DNA, including soya DNA.

In conclusion, based on the fact that crop chloroplast DNA is commonly found in milk, eggs and animal tissues, and that four research teams now have, between them, detected GM crop DNA in the milk, blood, liver, kidneys and intestinal tissues of GM fed animals, we conclude that it is likely that people are being frequently exposed to GM DNA by eating milk and meat from GM-fed animals, albeit at very low levels. Further research into this subject is needed.

Biotechnology companies have claimed that genetic engineering is no more unpredictable and dangerous than traditional cross-breeding, and as a result GM crops should not be subjected to special or extensive safety assessments. In reality, genetic modification differs fundamentally from traditional crossbreeding, and there are very good scientific reasons for being concerned about the safety of GM crops.

Genetic engineering usually involves introducing a package of genetic material derived from one organism (or several) into the DNA of another, often a completely different species. It is never based on the plant's normal reproductive processes, which are used in traditional cross-breeding. Instead, the foreign DNA is inserted into the plant's own DNA either by using the infective process of a disease bacteria or by bombarding the cells with fine metal particles coated with the foreign DNA. This artificial DNA insertion breaks down the natural biological mechanisms that normally maintain the genetic integrity of species. At various stages in the process, the number of cells are increased by a laboratory method called a "tissue culture". The technique has several serious flaws. This means there is a large number of risks inherent in GM crops, which do not apply to plants produced by traditional cross-breeding:

- Since the inserted genes usually come from other organisms such as bacteria or are synthetically produced, the proteins they produce are often new to the animal or human diet. The production of the protein may also involve a new biochemical pathway in the plant or affect an existing one, which can mean the production of other novel protein or biochemical by-products, some of which could be allergenic or toxic. This explains why GMOs have been associated with allergic reactions.
- The technique is highly disruptive to the plant's genes in various ways. The process of inserting the gene is known to damage the plant's own DNA: the gene can integrate right in the middle of another gene, causing it to lose its function.<sup>11</sup> Additionally, the tissue culture stages cause numerous changes to the rest of the plant's DNA. There is well-documented evidence by the FSA and others that genetic engineering causes extensive 'genome-wide' mutations and changes in the activity of very many of the plant's own genes as a result of genetic engineering.<sup>12</sup> These widespread genetic effects are not predictable or controllable.

Do GM foods have health impacts?

- Unlike naturally occurring genes which are generally only active at certain times and in certain cells, transgenes are usually active the whole time and in all cells. This means that the gene's products and any by-products are present in all of the plant's tissues. So, for example, unlike normal non-GM maize, the Bt toxin is present in all the cells in Bt maize, the main GM maize used in animal feed.
- It is now known that genes do not operate in isolation or completely dictate to the plant, contrary to the earlier simple scientific concept of genes as building blocks and the 'blueprint' of life. Genes are instead themselves controlled by numerous interactive plant regulatory mechanisms, including other genes and cellular processes, in a complex system which is far from fully understood (the science of 'epigenetics'). The result is that the same gene can behave in 10 different ways in 10 different locations, depending on the regulatory elements it ends up next to.<sup>11</sup> As genetic engineers cannot control where the genes end up in the plant DNA and do not know the effects of the different locations, unpredicted side effects easily occur.
- Scientists have recently found that a harmless protein in one organism can become harmful when inserted into another organism, even if its sequence of amino acids remains completely

identical. This is because of a process called "post-translation modification" whereby, depending on the plant species and the type of cell, different sugars, lipids or other molecules attach to the protein and modify its function (an example is 'glycosylation'). This was recently highlighted by Australian scientists who inserted a previously harmless bean protein into a pea, which then caused allergic reactions in mice.<sup>13,14,15</sup> Genetic engineers are unable to accurately predict and control this effect.

- Research commissioned by the FSA and others, on both humans and animals, has now shown that the inserted transgenes can move out of GMOs when they are eaten and enter the bacterial population in the mouth and gut, a process known as 'horizontal gene transfer'.<sup>16,17</sup> There are concerns that this means that there may be instances when, over time, the gut bacteria start to produce the transgenic protein in the animal or human gut, such as antibiotic resistance or Bt toxin production, with health implications.

- The inserted gene is often unstable and, over time, found to rearrange within the plant's genome. In 2003, a French laboratory analysed the inserted genes in five GM varieties, including Monsanto's Roundup Ready soya, and found that in all cases the genetic sequences were different to those that had been described years earlier by the biotechnology companies.<sup>18,19</sup> Subsequently, a Belgian research group also found differences to the companies' genetic sequences, as well as to those found by the French scientists.<sup>19,20</sup> This genetic instability means that the way in which the inserted gene expresses itself in the plant and its impacts on health may change over time.

Official safety assessments are far too narrow One of the most remarkable facts about the development of GM crops is that, despite years of immense public concern, political controversy and the developing scientific understanding of the risks of GMOs, very few of these risks are actually checked in the official regulatory approval process. There is a long regulatory process that requires the companies to submit considerable amounts of information, but almost none except a small sub-set of the above concerns are routinely investigated in the process.

Those opposed to GM crops generally believe that any overall assessment of the list of risks indicates that GM crops are currently far too risky to be used for food or animal feed. Governments, however, have been persuaded to allow GM crops to be grown and used for food or animal feed as long as there is a 'case-by-case' risk assessment. The problem is that the impacts of the genetic engineering process on the biology of organisms is so complex, and scientific knowledge of plant biochemistry so limited, that it is completely impossible for scientists to model and predict the actual health effects of each genetic engineering attempt. The only way that the risks listed above could be assessed on a case-by-case basis, with some level of accuracy, would be to use animal feeding trials. This is how the safety of medical drugs and pesticides are assessed. However, the biotechnology companies are not normally required to undertake such animal feeding trials in Europe, the US, or indeed anywhere.

Although this was the initial intention of the UK and US Governments, the use of animal feeding trials for risk assessment was quickly abandoned after the first of such trials, on GM tomatoes and potatoes, found unexpected adverse effects on the animals (see later). Instead, regulators mainly rely on an assessment process that is much more limited. Under this approach (commonly referred to as 'substantial equivalence'), a limited number of comparisons are made with the non-GM equivalent plant. Several of the physical characteristics of the new GM plant are compared with the non-GM variety. Then, a chemical comparison is made. But, although plants have up to 10,000 different biochemicals, the levels of only a small number of the GM plant's biochemicals are checked with the non-GM plant, such as key nutrients and known toxins. If the levels of these are considered 'similar', it is then assumed that the whole chemistry of the GM plant is similar as regards safety in almost

every other way. The GM crop is considered 'substantially equivalent' to the non-GM plant, and no further special safety tests have to be carried out. The OECD, for example, suggested that, "If a new food or food component is found to be substantially equivalent to an existing food or food component, it can be treated in the same manner with respect to safety".<sup>21</sup>

Under the EU assessment procedure, some other checks are required beyond this basic comparison, but the 'substantial equivalence' approach still rules. So, the EU usually requires testing to show whether the protein produced by the gene is toxic or allergenic. However, the safety of all the other novel proteins and biochemical by-products produced by the GMO are not usually checked. The stability of the inserted gene has to be checked, but not the stability of the whole genome and thus not the GMO as a whole. These other aspects are essentially just assumed, without any basis, to be safe. No GMO has ever been rejected under this assessment process.

Ever since 'substantial equivalence' was first proposed by the US Government for approving GM crops, there has been strong criticism of this process as fundamentally unscientific and inadequate for safety assessment. In 1992, when the US Government proposed using the concept instead of animal trials, the scientific advisers of the US Food and Drug Administration's (FDA) did not support the Government's policy, arguing that animal feeding trials were needed to identify undesirable effects.<sup>22</sup> The policy was adopted anyway and then taken up by Europe and other countries. In 2001, a review for the Canadian Government by the Royal Society of Canada concluded that, "The Panel finds the use of 'substantial equivalence' as a decision threshold tool to exempt GM agricultural products from rigorous scientific assessment to be scientifically unjustifiable."<sup>23</sup> Other scientists, writing in the eminent scientific journal *Nature* have described substantial equivalence as "a pseudo-scientific concept" which is inherently "anti-scientific because it was created primarily to provide an excuse for not requiring biochemical or toxicological tests". They point out that scientists are not able to reliably predict the effects of a GM food from knowledge of its chemical composition, and so active investigation of the safety and toxicity of GM crops is required.<sup>24</sup> Even the former Chair of the FSA's advisory committee, the Advisory Committee on Novel Foods and Processes (ACNFP), which until 2004 was responsible for carrying out safety assessments of GM foods, has said, "The presumption of safety of novel GM plants on the basis of substantial equivalence lacks scientific credibility."<sup>25</sup>

Poor safety assessment of Roundup Ready soya Monsanto's Roundup Ready soya (RR soya) is the most widely grown GM crop variety in the world and the most widely used GM crop in commercial animal feed. Its safety assessment is therefore of particular interest. 'Roundup Ready' soya varieties tolerate applications of Monsanto's 'broad spectrum' glyphosate herbicide, Roundup, which destroys all other plants. The summary of the safety data used in the regulatory approval process is available from Monsanto's website.<sup>26</sup> It does not, however, make for reassuring reading for it shows that Monsanto's scientific case is very flimsy. The new protein which the genetic modification had introduced to the soya was compared with other proteins already in the food chain, and deemed to be 'functionally similar'. Its amino acid sequence was compared with known protein toxins and allergens, and found to be different. Monsanto then claimed that 'compositional analyses' established that the GM soya (as a whole) was substantially equivalent to the non-GM parent variety and other soya varieties. The safety of the novel protein was assessed only in one short-term (acute) feeding trial with mice. The safety of the protein was not tested on any of the species that are now actually eating the novel protein in animal feed. The only feeding tests carried out with the soya were 'nutritional' feeding studies, which assessed growth rate in a variety of animals and milk production in dairy cows. No animal feeding studies were carried out which were specifically designed to determine the safety of the whole GM soya; in particular no toxicological tests were done. No long-term feeding studies were carried out.

In the absence of such basic scientific investigations, it is clear that no objective assessment of Monsanto's evidence could conclude that the safety of RR soya has been determined. Animal feeding tests show negative effects of GM crops. The biotechnology companies frequently refer to the large number of published animal feeding studies as evidence of the safety of GM feed. However, it is important to stress that the vast majority of these are not safety studies. They are not toxicological studies, which would involve analysing the animal tissue for toxic effects, or studies of other safety aspects such as the rate of horizontal gene transfer. Instead, these studies are mostly of commercial interest, designed to evaluate the effect of the GM crops on commercial feed performance indicators, such as livestock growth rates or milk production. In contrast, if we look at the much smaller number of genuine animal safety studies, some of which were conducted by the companies themselves, a very different and very worrying picture emerges. We summarise below the alarming findings that have now accumulated for the GM crops being used as food and animal feed.

#### (i) GM soya

Russian rat trial – A Russian scientist, Dr Irina Ermakova, investigated the effects of feeding Roundup Ready soya to rats, with dramatic findings of apparent generational effects. A group of female rats were fed RR soya before mating, during pregnancy and during lactation. Very high mortality rates occurred in the rat pups: 56% died within three weeks of birth, compared with only 9% in the control rats fed non-GM soya. Additionally, stunted growth was observed in the surviving progeny, with some of the organs in the smaller GM-fed pups being tiny in comparison with those from control groups.<sup>27</sup> This study has now been published.<sup>28</sup> Dr Ermakova was shocked by her own results and has called for further detailed investigations to be undertaken.<sup>29</sup> (The ACNFP reviewed an early draft of Ermakova's work and said it lacked detail, in particular about the geographical origins of the GM and non-GM soya used and whether they contained mycotoxins, and said no conclusions could be drawn.<sup>30</sup> They also claimed that her results were inconsistent with another feeding trial of RR soya which had not found any adverse effects.<sup>31</sup> The ACNFP's comments are seen as biased, however, as the latter study was not a valid comparison since it used male mice, not pregnant rats, and, while the ACNFP called this study "well controlled", it had less nutritional detail than Ermakova's study.<sup>32</sup>)

Italian mouse trial – One of the only long-term feeding studies carried out on GM crops was undertaken by scientists from Urbino, in Italy, and found that Roundup Ready soya affects key body organs. Mice were fed RR soya for up to 24 months. A variety of organs and body fluids were then examined. The scientists found significant cellular changes in the liver, pancreas and testes of mice, which involved structural changes and/or functional changes.<sup>33,34,35,36,37</sup> The cellular changes in the liver, which metabolises toxic compounds, suggested that RR soya causes an increased metabolic rate.

FSA human feeding trial – The only published trial of GM foods on humans was carried out by Newcastle University for the Food Standards Agency, and published in 2004. It was designed to study what happens to transgenic DNA in the human gut and whether it could pass out and enter bacteria in the body, a long-standing concern. It found that the entire transgenic gene in GM soya survives the passage through the stomach and small intestine, though not through the colon. The study also discovered that portions of transgenic DNA had 'horizontally' transferred from GM food into the intestinal bacteria of some of the volunteers, which was a shocking discovery with implications for the long-term impacts of GM consumption.<sup>16,38</sup> Just as shocking, however, was the fact that at the time the FSA chose not to mention this key finding in its communications on the study, thus widely giving the impression that horizontal gene transfer had not been identified in the study.

#### (ii) GM maize

Monsanto rat trial – In June 2005, after a German court ruling in favour of Greenpeace, Monsanto was forced to release the full details of its safety data for the GM maize, MON 863, which was being evaluated by the European Food Safety Authority (EFSA). The maize had been genetically modified to produce a Bt-toxin which kills the corn rootworm, a maize pest. Monsanto's studies showed that the Bt maize had several statistically significant effects on the rats: increased white blood cells, a drop in immature red blood cells, decreased kidney weight and increased blood sugar levels.<sup>39,40</sup> The chemical data also showed signs of toxic effects to the liver and kidney systems. Professor Gilles-Eric Séralini, a molecular endocrinologist and member of two French government commissions that evaluate GM food, said that the rats likely suffered a toxic reaction. A full analysis of the chemical data by Professor Séralini and his team was published in May 2007. It states, “with the present data it cannot be concluded that GM corn MON 863 is a safe product”.<sup>41</sup> The EFSA GMO Panel, nonetheless, recommended the GM maize should be approved, accepting Monsanto arguments as to why the statistically significant differences should be ignored. (The Panel has been accused of being pro-GM and having financial links to the industry. For example, according to Friends of the Earth, two of its members have appeared in industry videos promoting biotechnology).<sup>40,42</sup> Despite the EFSA's endorsement, the EU's Council of Ministers voted to not approve the GM maize. However, the vote required a ‘qualified majority’. This was not achieved, so the Commission had the final say. It approved MON 863 on the basis of the ‘scientific advice’ of the GMO Panel, in January 2006.<sup>40,43</sup>

Aventis's chicken and rat trials – Aventis (since purchased by Bayer) carried out two controversial feeding trials of its herbicide-tolerant Chardon ‘Liberty Link’ (T25) maize, which it submitted for approval at the end of 1995. In a 42-day feeding trial with chickens, there was a 7% mortality rate for chickens fed the T25 maize, twice the rate of the non- GM fed chickens (10 of 140 died versus five of 140 of those fed non-GM maize). Compositional tests revealed a significant difference in the level of fats and carbohydrate between the GM and non- GM maize, suggesting alterations in some biochemical pathways.<sup>44</sup> Separately, Aventis also tested just the transgenic PAT protein which is produced by the modified maize and which gives resistance to the company's herbicide, glufosinate. In a short-term, 14-day rat feeding study, the effects of the isolated protein were tested on four groups of rats, two of which were fed the PAT protein, one at a low level and one at a high level. The design of the studies meant that any negative effects that occurred would be obscured, unless they were very dramatic: only five male and five female rats were tested in each group (restricting the chance of establishing statistical significance for any effects), the starting weights varied by +/-20% (rather than the usual +/-2%), and the group receiving the high level of the transgenic PAT protein had the highest starting body weights. Despite this, and the fact that the high PAT protein group showed the highest feed intake, this group ended up with the lowest body weights, significantly less than the group receiving the equivalent non-GM diet and the group receiving the low level of PAT protein. Biochemical differences and measurements of the urine volume indicated an increased metabolic load on the rats fed the PAT protein.<sup>44</sup> Despite this opposing scientific evidence, T25 maize was approved for consumption by the EU in April 1998. Liberty Link GM maize has been widely marketed in North America by Bayer Crop-

Science.

UK study of gene transfer in sheep – A UK study with sheep, published in 2003, found that when GM maize was eaten, after only eight minutes, some of the inserted transgenes moved out from the maize and ‘horizontally’ transferred into the bacteria in the mouth. One of the inserted genes coded for resistance to the antibiotic kanamycin. After the transgenes transferred, the E.coli bacteria were found to be resistant to the antibiotic, showing that the transgenes had integrated into the bacteria's own DNA. This proved that ‘horizontal gene transfer’ of inserted genes can happen relatively easily.<sup>17</sup>

(iii) GM oilseed rape (Canola)

Monsanto rat trials – The GM oilseed rape, GT73, has been approved in Europe since 2004, although documentation published by the US FDA shows that two of Monsanto's rat feeding studies found statistically significant adverse effects.<sup>45</sup> GT73 is a glyphosate-tolerant 'Roundup Ready' (RR) variety. The first study, carried out with a mixture of two of Monsanto's glyphosate tolerant oilseed rape varieties, including GT73, found statistically significant decreases in terminal body weight and cumulative body weight gains in male rats (but not female rats) fed GM rape, compared to rats fed non-GM rape. Monsanto, however, argued that there were 'technical' problems with the study, and repeated it. Interestingly, while the US FDA clearly states that statistically significant differences in the body weights of the male rats were found, the EFSA claimed that the study found no differences in body weights (though they admitted that the GM-fed rats had higher liver to body weight ratios).<sup>46</sup> The second study, conducted solely with the GT73 variety, found that rats fed this GM rape had relative liver weights that were increased up to 16% compared to those fed the non-GM parental line. Apparently forgetting that there had been 'technical' problems with the first study and that the rats had not been fed exactly the same GM rape in both studies, Monsanto argued that the results of the second study should also be ignored since the results of the two trials were 'inconsistent'. They carried out a third study which did not find any problems.<sup>45</sup> In August 2004, GT73 was approved for food and feed use in the EU.

(iv) GM peas

Australian mice trial – The results of recently published research by Australian scientists on the safety of GM peas raises serious questions about the safety of GM crops in general. The researchers inserted a gene, normally found in kidney beans, to peas to make them resistant to the pea weevil, and then fed the GM peas to mice for four weeks. The peas triggered allergic reactions in the mice: the lung tissue became inflamed. The mice also became sensitive to other substances, reacting to egg white, whereas those fed non-GM peas did not. Even after cooking the peas, the mice still had an allergic reaction.<sup>13,14,15</sup> This was considered a surprising result as the mice did not have an allergic reaction to non-GM peas or to the kidney beans, and because the new protein being expressed by the introduced gene in the peas was chemically identical to the protein in the kidney beans. Closer examination, however, revealed that although the protein in the GM peas had an identical amino acid sequence to the protein in beans, there were now differences in the sugars attached to it (due to glycosylation). The scientists concluded that "transgenic expression of non-native proteins in plants may lead to the synthesis of structural variants possessing altered immunogenicity".<sup>13</sup> In other words, a protein which is non-toxic in its native plant cannot be assumed to remain non-toxic when transferred and expressed in a GM plant – yet this is precisely what has been assumed by regulators so far. The 'substantial equivalence' approach does not assess the possibility of such harmful glycosylation occurring.

(v) GM tomatoes

Calgene mice trials – Unpublished trials with GM Flavr Savr tomatoes commissioned by the company Calgene and submitted to the US FDA in order to gain approval for the first GM food, found that mice fed the tomatoes developed lesions in the gut wall. In a 28-day trial, groups of 40 rats were fed GM tomato or a control diet. Out of 20 female rats fed the GM tomato, lesions were identified in four and seven rats, by two expert groups respectively. No such effects were found in the control rats. The FDA requested another study to be carried out. Lesions occurred again (2 of 15 rats) and, additionally, seven out of 40 (17.5%) of the rats fed the GM tomatoes died within two weeks.<sup>47</sup> Following this, the biotechnology industry and US Government agreed to instead use the 'substantial equivalence' concept for approving GM crops, rather than animal feeding trials. Calgene's Flavr Savr tomato and



Zeneca's similar GM tomato variety were approved by the FDA in mid-1994. Both varieties were also cleared for sale in the UK, although only Zeneca's (then AstraZeneca) product was sold, as tomato paste until June 1999.

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## **More Health Effects**

New study confirms that GM food damages fertility.

GM Free Cymru, 12 November 2008

In a new Austrian study that will send shock waves through the corridors of power in the EU, and through the offices of the GM corporations, it has been discovered that GM corn has a damaging effect upon the reproductive system (1).

The work was done at the request of the Austrian Health Ministry, and the results were presented yesterday by Professor Jurgen Zentek and his team to an expert conference organized by the Austrian Agency for Health and Food Safety. The work was done at the University of Vienna, using a GM maize hybrid line called NK603 x MON810, which has two copies of the RR gene in it, each copy with its own, different promoter sequence, as well as the MON810 gene.

In one of the very few long-term nutrition studies conducted so far with an approved GM product (2), it became apparent over a period of 20 weeks that the fertility of GM corn fed mice was seriously impaired, with fewer offspring than mice fed on non-GM equivalent material. In a multi-generational trial, mice fed with GM maize had fewer offspring in the third and fourth generations, and this difference was statistically significant. Mice fed with GM-free corn reproduced more rapidly. In a series of carefully-controlled trials, it was also discovered that there was a statistically significant decrease in litter weight in the third and fourth litters of mice in the GM-fed group as compared to the control group.

Although the Austrian authorities have announced the findings in a somewhat cautious fashion, stressing the urgent need for "further studies", the implications of the work are immediate and far-reaching. Speaking for GM Free Cymru, Dr Brian John said: "This work will do huge damage to the GM industry worldwide, since it shows that a crop — Monsanto's maize line NK603 x MON810 — which has been approved as safe by EFSA, and given consent for use in food and feed by the EC, is in fact dangerous to health. It demonstrates that the approvals process is at best inadequate and at worst corrupt. This is what NGOs have been saying for years (3).

At the same time this work effectively confirms the findings of Irina Ermakova in 2005, who found that rats fed on a diet including GM soya produced offspring which were weak and which had a much higher mortality rate than rats fed on a non-GM diet (4). She also found that when both male and female animals were fed on GM soy they became effectively sterile and produced no offspring. Her work was heavily criticised in a despicable publishing scam by a GM industry which fully appreciated its importance (5). However, there has always been a suspicion that ALL soya damages reproductive function (6). That is why this new work — based upon GM maize rather than GM soy — is of such massive importance."

The Monsanto maize line MON863 has already been shown — in the company's own experiments designed to mask health effects — to damage the internal organs of animals in feeding trials (7). This new evidence, from an EU government-sponsored study, shows that the standard mantra that "GM does not damage health" is shown to be a lie. GM food and feed DOES damage health in a number of ways, as this and other reliable studies have shown over the past decade, beginning with Arpad Pusztai in 1998 (8).

GM Free Cymru has now written to Environment Secretary Hilary Benn challenging him to revise his recent statement (9) that "the scientific evidence clearly demonstrates the safety of GM foods." The NGO has accused him — and his advisory committees — of promoting "a culture of complacency" relating to GM food safety, and of implying that the GM health debate is over and done with. The letter (10) says: "You and your advisers have consistently shown a patronising and dismissive attitude towards independent researchers who have shown that animals fed on GM foods are harmed. You have systematically ignored their results which show — over and over again — that GM materials cause cellular and tissue damage. Will you now revise your opinion that the GM / health debate is over, and demonstrate that you are prepared to put the health of UK consumers above the commercial interests of the GM corporations?"

NOTES

- (1) Austrian study shows GM corn negatively affects reproductive health in mice  
<http://www.ages.at/ueber-uns/presse/pressemeldungen/klarstellung-zu-neuen-erkenntnissen-zur-fuetterung-mit-gvo-mais/> Genetically-engineered food: potential threat to fertility  
 Greenpeace International, 11 November 2008  
<http://www.greenpeace.org/international/press/releases/ge-threat-to-fertility-11112008>
- (2) NK603 x MON810 EFSA positive opinions for hybrid lines:  
<http://www.foodlaw.rdg.ac.uk/news/eu-05071.htm> Commission approval for food and feed 24 October 2007 (includes EFSA opinion) <http://www.gmo-compass.org/eng/gmo/db/61.docu.html>
- (3) [http://www.gmfrecymru.org/open\\_letters/Open\\_letter10Dec2007.htm](http://www.gmfrecymru.org/open_letters/Open_letter10Dec2007.htm)  
[http://www.greenpeace.org/international/press/reports/gp\\_briefing\\_seralini\\_study](http://www.greenpeace.org/international/press/reports/gp_briefing_seralini_study)  
<http://www.i-sis.org.uk/CAGMMAD.php>
- (4) <http://www.regnum.ru/english/526651.html>  
[http://www.gmfrecymru.org/pivotal\\_papers/ermakova.htm](http://www.gmfrecymru.org/pivotal_papers/ermakova.htm)  
<http://www.seedsofdeception.com/utility/showArticle/?objectID=297>  
[http://www.gmfrecymru.org/pivotal\\_papers/rottweiler.htm](http://www.gmfrecymru.org/pivotal_papers/rottweiler.htm)
- (5) The Ermakova study was of course so appalling in its findings that the GM apologists McHughen, Moses, Chassy and Giddings "set her up" for an orchestrated attack, with the connivance of Nature Biotechnology.  
[http://www.gmfrecymru.org/pivotal\\_papers/rottweiler.htm](http://www.gmfrecymru.org/pivotal_papers/rottweiler.htm)  
[http://www.gmfrecymru.org/pivotal\\_papers/involvement\\_ermakova.htm](http://www.gmfrecymru.org/pivotal_papers/involvement_ermakova.htm)
- (6) <http://www.guardian.co.uk/science/2008/jul/24/foodtech.medicalresearch>
- (7) <http://www.scoop.co.nz/mason/stories/HL0311/S00113.htm>  
<http://www.organicconsumers.org/ge/testing112403.cfm>  
[http://www.gmfrecymru.org/pivotal\\_papers/monsanto2.htm](http://www.gmfrecymru.org/pivotal_papers/monsanto2.htm)
- (8) [http://www.gmfrecymru.org/pivotal\\_papers/ten\\_years\\_on.htm](http://www.gmfrecymru.org/pivotal_papers/ten_years_on.htm)
- (9) Benn backs GM food safety News | 10 November, 2008. By Jack Davies  
<http://www.farmersguardian.com/story.asp?sectioncode=1&storycode=22530>

## **Genetically Modified Animals – The next step?**

The FDA is set to approve genetically engineered animals into the human food chain. From the FDA website: "Genetic engineering generally refers to the use of recombinant DNA (rDNA) techniques to introduce new characteristics or traits into an organism. When scientists splice together pieces of DNA and introduce a spliced DNA segment into an organism to give the organism new properties, it's called rDNA technology. The spliced piece of DNA is called the rDNA construct. A GE animal is one that contains an rDNA construct intended to give the animal new characteristics or traits."

The FDA plans to classify GE animals as a 'drug' until food products from these animals are recognized as safe. The FDA tells consumers: "GE animals currently being developed can be divided into six broad classes based on the intended purpose of the genetic modification: (1) to enhance food quality or agronomic traits (e.g., pigs with less environmentally deleterious

wastes, faster growing fish); (2) to improve animal health (e.g., disease resistance); (3) to produce products intended for human therapeutic use (e.g., pharmaceutical products or tissues for transplantation; these GE animals are sometimes referred to as "biopharm" animals); (4) to enrich or enhance the animals' interactions with humans (e.g., hypo-allergenic pets); (5) to develop animal models for human diseases (e.g., pigs as models for cardiovascular diseases); and (6) to produce industrial or consumer products (e.g., fibers for multiple uses)."

The same FDA document acknowledges the risks involved with GE animals. "A primary goal during the investigational phase of development of the GE animal is to ensure that edible products from the GE animals do not enter the food or feed supply without prior FDA authorization. Edible products include, but are not limited to milk, honey, eggs, muscle tissue, as well as other tissues such as liver, kidney, skin, and fat. We encourage you to provide a disposition plan for all classes of investigational animals and animal products. We recommend that all surplus investigational animals and their biological products be disposed of by incineration, burial, or composting, and that appropriate records be kept of animal identification and disposition. In some special cases, alternative disposition may be appropriate provided that our safety concerns are met (see Section III.C). 21 CFR 511.1 (b)(5)."

GE animals have probably already entered the food supply; the pet food supply. Please notice the wording of the following sentence quoted above 'We recommend that all surplus investigational animals and their biological products be disposed of by incineration, burial, or composting, and that appropriate records be kept of animal identification and disposition.' The words 'We recommend' should make pet owners very concerned. Since currently, despite Federal law that opposes this, the FDA allows 4-D animals (dead, dying, diseased, and disabled) and euthanized animals including expired laboratory test animals to be processed into pet food. There is little doubt GE test animals, including GE test animals 'gone bad', are as well processed into pet food. Pet owners can only guess at how long and how many GE animals have already been rendered becoming pet food ingredients.

Pet food should not be the dumping ground for waste materials of science or the processing of human food. Equally as disturbing is the FDA's blind eye to Federal regulations prohibiting this. Millions of pet owners unknowingly purchase dog food, cat food, or pet treats every single day that could contain a genetically engineered animal experiment gone bad, genetically modified grains, dead, diseased, dying or disabled animals, and animals that have completed their research use, including the test drugs within the animals; all labeled as 'premium', 'choice', or 'healthy' pet foods.

## **Who owns DNA?**

In February 2005, Monsanto published multiple patent applications at the World Intellectual Property Organization in Geneva, Switzerland. These proposed patents encompass nearly the entire lifespan of a pig destined for slaughter, from conception to selection.

In application WO 2005/015989, Monsanto essentially attempts to patent careful selection of parentage and crossbreeding, elements of farming that have existed since the birth of agriculture and human civilization. According to Greenpeace writer Brian Thomas Fitzgerald, "The main 'invention' is nothing more than a particular combination of these elements designed to speed up the breeding process for selected traits." If a combination of techniques is patentable, what if some poor pig farmer "invented" the combination first, but without the craftiness or self-righteousness to believe that he could own it? We will probably never know.

Another proposed patent (WO 2005/017204) focuses on a naturally-occurring gene sequence first identified in mice and humans. Pigs that have this product of natural selection grow

faster than pigs without the sequence, so they produce more pork while receiving less animal feed. Monsanto wants to own the ability to detect this gene sequence and its results -- yes, the pigs themselves, as well as their "genetically superior" parents. "Monsanto isn't just seeking a patent for the method; they are seeking a patent on the actual pigs that are bred from this method. It's an astoundingly broad and dangerous claim," explains Christoph, the Greenpeace researcher who first blew the whistle on these patents.

Monsanto seeks to patent pigs in more than 160 countries and territories, including the United States. Submitting patent applications to the World Intellectual Property Organization (WIPO) was only the first step in Monsanto's attempt to gain what Fitzgerald classifies as a global monopoly. WIPO will forward the applications to the individual patent offices and each country or territory will then independently decide whether or not to grant Monsanto the patents.

The Monsanto World Headquarters is located in the United States, so it will be interesting to see if the U.S. Patent and Trademark Office grants this "homegrown" company the patents it desires. Until recently, patent law did not allow living things to be patented. However, genetic manipulation has turned this aspect of U.S. patent law from crystal clear to murky. The 1980 Supreme Court Case *Diamond v. Chakrabarty*, 447 U.S. 303, changed everything.

When the U.S. Patent and Trademark Office refused genetic engineer Ananda Mohan Chakrabarty's application to patent a bacterium, Chakrabarty took the case all the way to the Supreme Court. In a landmark, five-to-four ruling, the Supreme Court upheld the patent. Chief Justice Warren E. Burger justified their interpretation of 35 U.S.C. §101, writing, "A live, human-made micro-organism is patentable subject matter under 101. Respondent's micro-organism constitutes a 'manufacture' or 'composition of matter' within that statute." However, the Supreme Court clarified that their decision was "not to suggest that §101 has no limits or that it embraces every discovery. The laws of nature, physical phenomena and abstract ideas have been held not patentable." Chief Justice Burger goes on to write, "Thus, a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter." Section 2105 of the U.S. Patent and Trademark Office's *Manual of Patent Examining Procedure* uses the Supreme Court's decision as its guide for determining patent in the often-unclear world of genetic engineering.

The U.S. Patent and Trademark Office will undoubtedly base much of its decision on Section 2105, bringing several questions to the forefront. Is a particular combination of crossbreeding and selection a "law of nature" or a type of "manufacturing" process? Is a naturally occurring gene sequence "physical phenomena" or a manufactured "composition of matter"? These are the decisions that the U.S. Patent and Trademark Office must make.

Only time will reveal the world governments' decisions on the issue. If many world governments grant Monsanto these patents, Greenpeace and likeminded organizations fear the impact it might have on the world. Fitzgerald likens the possible future to feudalism, but worse: "By claiming global monopoly patent rights throughout the entire food chain, Monsanto seeks to make farmers and food producers, and ultimately consumers, entirely dependent and reliant on one single corporate entity for a basic human need. It's the same dependence that Russian peasants had on the Soviet Government following the Russian revolution. The same dependence that French peasants had on Feudal kings during the Middle Ages. But control of a significant proportion of the global food supply by a single corporation would be unprecedented in human history."



## What is it all About? An article from Acres USA

# interview **The Seed Barons**

## How Big Ag, Big Oil & Big Government Are Hijacking the World's Food Supply

**ACRES U.S.A.** What is your background, and how did it lead you to where you are today?

**F. WILLIAM ENGDAHL.** I've been working as an economic researcher, historian and freelance journalist for some 35 years, initially in New York, then in Europe for a good part of the last five years or so. Back in the 1970s when the United States was going through the so-called energy crisis with the first oil shock in 1973-74 and then the second one in the end of the 1970s, I got interested in the power of Big Oil and began doing research on the networks of influence around the Seven Sisters oil companies. I got quite involved with that and went rather often to Texas, and was invited by independent oil associations throughout the Southwest because of my writings about the issues affecting independent oil versus the multinational companies. That led me into an approach to understanding these problems through history. I was asked back in the early 1990s by a small German publisher if I would consider writing a book on the history of oil. This was actually during the first Iraq war, in 1991. I blocked out some time and began researching a book that later became *A Century of War*. I ended up going

way back into the 1880s and the origin of the British oil-fired naval fleet — the Royal Navy, which was a project instituted by Winston Churchill when he was First Lord of the Admiralty. *A Century of War* traced what I call a thin red line that connects some of the major events in the history of the last hundred or more years, right down to the present, including the United States and Iraq and the threats against Iran, the tensions between China and the United States over Sudan, Darfur, and so forth. The control of oil became a centerpiece of U.S. power projection in the world, especially after World War II. There's a quote from Henry Kissinger in the mid-1970s — he said if you control oil you are able to control whole nations, and if you control food you are able to control the people.

**ACRES U.S.A.** How did you cross over into the biotech issue?

**ENGDAHL.** Around the mid-1980s my journalistic assignments brought me to the whole question of the Global Agreement on Tariffs and Trade. I spent a lot of time going back and forth to Brussels, where the European farm organizations are headquartered and also the European Economic Community, as it was called in the 1980s, now the European Union. As I had done with oil, I investigated how the grain markets worked. I found, quite to my surprise and fascination, that the international grain market and the agricultural policies in Brussels, supposedly an autonomous entity representing the interests of European farmers and consumers, were controlled by *the same people who controlled U.S. foreign policy*. And that was the so-called grain cartel, the four or five largest companies — Cargill, Archer Daniels Midland (in those days you had Continental Grain) — and they had enormous lobbying influence in Brussels to dictate crucial farm policies that were favorable to their interests. I had been looking at the question of the GATT Uruguay Round and the emergence of agribusiness. About five or six years ago I began going back to that work I'd done in the 1980s. I

began looking into the whole question of genetically modified organisms and the patenting of plants. Without really having gone into the biology and the background of it at that point, what alarmed me in a gut way was the fact that the decisive patents — a monopoly over crucial feed grains, soybeans, corn and so forth — were at that time held by three or four global multinational corporations — Monsanto, DuPont, Dow, and the fourth would probably be Syngenta of Basel, Switzerland, which is really a merger of Swiss, Swedish and ultimately British biochemical entities. Those three or four corporations, as I saw the trends five or six years ago, were in a position to literally patent and potentially control the seedstock of the entire human race within a decade or so at the rate they were going. Three of the four companies that could amass such power, DuPont, Dow Chemical and Monsanto, had atrocious histories concerning public safety going back to Vietnam War — Agent Orange and dioxin contamination of their own employees in documented cases over decades, for example, and the hiding of those facts. The fact that they had such influence on U.S. policy concerning genetic manipulation of plants was really an alarm signal that motivated me to begin the research that emerged in my book *Seeds of Destruction: The Hidden Agenda of Genetic Manipulation*, which was recently been released by Global Research in Canada and is available in the United States as well.

**ACRES U.S.A.** Where do we stand now with Monsanto and DuPont's efforts to control the global market? Where did your book end up, and what's happened since you finished work on it?

**ENGDAHL.** I would say the most dramatic event since then is the recent opening of what the BBC called the Doomsday Seed Vault in Spitsbergen, almost to the Arctic Circle, in a chunk of rock that's claimed by the Norwegian government. They have created a global seed bank which is to have samples of every seed variety on the face of the earth stored away in a vault deep inside this mountain that is supposed to be invulnerable or impenetrable to any kind of catastrophe, including nuclear attack. The curious thing about this seed vault is that it is being sponsored by what I call the gene giants or the four horsemen of apocalypse, these corporations

that are promoting the patenting of life forms through GMOs, and I suspect that cannot be an innocent venture. We have seed banks that preserve seed varieties *in situ* in crucial places around the world. We used to have one in Abu Ghraib in Iraq, but after the U.S. occupation it simply disappeared. Nobody in Iraq was able to trace what happened to it. It was probably bombed into extinction. But there are those seed banks in crucial places. There's one in Syria for wheat varieties that are essential to the world, and there are seed banks for corn or maize varieties in Mexico in the Oaxaca area. As the book was being finished and put into print in 2006, I updated it with the dramatic move by Monsanto to acquire a small, relatively unknown company in Mississippi, Delta & Pine Land. Along with D&PL, they acquired worldwide patent rights to something that's called in the popular press "Terminator technology," which, crudely put, causes a suicide in the seed of a plant containing this technology within one harvest year. You have one harvest and then the plant is unable to reproduce, so farmers can't save seeds for the next harvest as they've done for thousands of years, meaning that farmers who lock into these patented corn or soybean or other Monsanto seeds will be permanently indentured to the company and have to pay license fees to get new seeds and plant anything. **ACRES U.S.A.** But Monsanto has said they won't use that technology, haven't they?

**ENGDAHL.** Monsanto was very deceptive in claiming they would not commercialize Terminator technology. Delta & Pine Land held the patent to Terminator, but what's even more alarming is the co-patent holder for the technology was none other than the United States Department of Agriculture — the U.S. government! And while Monsanto held this pious press conference in an earlier attempt to acquire D&PL in 1999 and announced they were not going to commercialize Terminator, the Department of Agriculture defiantly said, "Well, we're going ahead with our research and going to work with Delta & Pine Land full steam ahead," which they did. That leads one to question what the motives of the U.S. government have been, at least in the period since 2000 up until the present, because the USDA is still actively engaged in research projects supporting

Terminator.

**ACRES U.S.A.** And what *are* the motives?

**ENGDAHL.** Some people, myself included, think that there's a much more sinister agenda to this genetically modified expansion of seeds around the world. Going back to the Kissinger statement from the 1970s, it means the ability to control vital elements of the human food chain. Soybeans are essential to feedstock these days for mainstream cattle and most animal husbandry, corn as well, rice — there are several strains of rice that have been genetically modified and patented, and of course rice is the feedstock for about 40 percent of the world's population, mainly in Asia. The move to control these essential seeds that are vital to the food chain is something in itself, but then if you combine it with the fact that the U.S. government, since 1992 when George H.W. Bush met with Monsanto in a private meeting in the White House and afterwards signed a directive saying that genetically modified plants are substantially equivalent to standard plants. This was the infamous *substantial equivalence doctrine*, that GMOs were substantially equivalent to normal corn or soybeans or cotton, therefore we need no special government safety oversight or independent testing of genetically modified plants. To my mind this was one of the most lunatic and dangerous steps by any government official perhaps in the entire history of the United States. If you think about it for a minute, at the same time Monsanto, et al., were claiming that their patented corn or patented soybeans or their rBGH hormone for milk production were unique because they had shot them with some bacillus or some fungus or lord knows what, and changed the DNA of the plant in question. Therefore they're claiming their gene cannons had made the resulting product *unique*, and at the same time they're saying that it's *not* unique, it's just like other corn or soybeans or whatever. Within this contradiction, there is a very, very, very ugly history of Monsanto and government in collusion to simply have no effective regulation or oversight to this day of what goes into the human food chain in terms of genetically modified products. **ACRES U.S.A.** Has the Bush era given

biotech corporations the window they needed to disarm regulatory authority?

**ENGDAHL.** There virtually are no controls. There have been since 1992 no government controls, not from the Food and Drug Administration, not from the USDA. None of the government agencies that ought to be monitoring these things and conducting completely independent tests are doing so. Monsanto sends its top people in to become the key point person in the FDA or relevant agencies and then they go back out of the government service after they've done what Monsanto would like to have them do and go right back into Monsanto. Mickey Kantor, Bill Clinton's U.S. Trade Representative, did many, many nice favors for Monsanto in terms of global trade negotiations, and then left government and went right into the Board of Directors of Monsanto.

**ACRES U.S.A.** Did their major accomplishment during this administration consist of reinforcing the status quo of no regulation, heading it off?

**ENGDAHL.** Well, there is no regulation. What's more, the present administration has gone out of its way to push GMO on countries — Iraq, for example. Monsanto wrote what is called Order 81 when Paul Bremer was what some people called the proconsul in Baghdad after 2003. The U.S. government generously gave the Iraqis a hundred orders and they were *orders* — this is what you'll do. Order 81, in violation of the Iraqi constitution, insisted that patented plants be recognized under Iraqi law and that if someone decided to get a hold of Monsanto GMO seeds and plant them, he could be forced to pay license fees to Monsanto. The recognition under Iraqi law of genetically modified seeds was brought in by the United States back in 2004.

**ACRES U.S.A.** What does the creation of this Arctic seed vault tell us about the geopolitical ambitions of the major grain companies, the major food powers?

**ENGDAHL.** I think the Doomsday Vault is a useful way to focus people's attention on what's going on with these things. To spend millions of dollars on such a remote and ostensibly useless project really brings into question what the Bill Gates Foundation is doing together with the Rockefeller Foundation, together with the Norwegian government and

Syngenta Foundation and Monsanto up in the Arctic Circle? What are they saving these seeds for? Some people think they're storing them away either to allow the GMO companies to get their hands on the seed heritage of mankind, which now under present structures is supposed to be strictly forbidden, and to begin patenting them, patenting different strains of Basmati rice and corn that is uniquely grown in Mexico and so forth, so that they *really* have a lock on the food supply. One can only speculate at this point, but the Rockefeller Foundation created the genetic revolution and funded it with over \$100 million going way back to the 1970s, and the Rockefeller Foundation has a pretty clear track record in terms of population control, in terms of eugenics, which is really about culling the human herd and selecting out undesirables such as racial minorities or whatnot, and creating, well, in Germany in the 1930s the Rockefeller Foundation financed what was called the creation of the master race, and that's no exaggeration. I document this shocking story in some detail in *Seeds of Destruction*.

**ACRES U.S.A.** Surely they've renounced that in the years since then. It's Corporate Public Relations 101: distance self from Nazi past.

**ENGDAHL.** They *haven't*, that's the interesting thing. They've just tried to ignore it. The Rockefeller family was very active in the American Eugenic Society, and eugenics was the program that Hitler's Nazi doctors enforced, and ultimately it led to the gas ovens. When all this came out in the Nuremberg trials, they decided to change the name of the American Eugenic Society, and they said quite defiantly that the new name of eugenics is *genetics*. The funding of biology centers around the world and research that led to the creation of GMOs was directly a project from the beginning of the Rockefeller Foundation. One doesn't need to be a genius to figure out that if the same people are so intently funding eugenics and forced sterilization of what they call "inferior peoples," and they suddenly start funding genetically engineered seeds, maybe the two fit together, and maybe there's a plan to control the seed supply of whole ethnic groups or populations around the world. That would be an ultimate geopolitical weapon, as I document in the book. And it's certainly not beyond imagination,

unfortunately.

**ACRES U.S.A.** Then multinationals based in a fading superpower would still be able to wield enormous power over the global food supply and thus be able to affect the behaviour of unruly nations?  
**ENGDAHL.** I've written two books now of what I plan as a trilogy. I'm working on the third. The third part of the Kissinger code was if you control money, you control the whole world. And the control of the seed supply in crucial food elements is an unbelievably powerful weapon. Let's say China is beginning to develop a little independence and is not simply bowing to every request of George Bush and Dick Cheney, or whoever might be in Washington, and tries to assert a little bit of its own interest in Asia. The United States can say, "We're cutting off your seed supply, you'll no longer be able to cultivate rice after one harvest season unless you do exactly what we say. We're cutting off your oil supplies to Iran and Sudan and other countries in Africa because we don't like what you're doing or you're not investing enough in U.S. government debt or bailing out the housing debacle of the New York banks." I mean, it could be anything. It just gives an unbelievable amount of power to whoever controls it. These three or four companies are tightly, tightly interlinked with the Pentagon-military-industrial complex. That's really what should ring alarm bells among people.

**ACRES U.S.A.** Genetic modification of food encountered some roadblocks and reversals in the last few years, especially in the European Union. You live in Germany — have GMOs met their Waterloo on the continent?

**ENGDAHL.** It's a mixed picture in Europe. The climate in Europe among the public is very adamantly against GMOs, the laws in places like Germany and elsewhere — in Austria, there's a national law that forbids planting of GMOs, point stop. In Switzerland there's a five-year moratorium, point stop, no GMOs. Farmers I know were instrumental in that. In Greece, the same thing. It's banned. In Poland the parliament there has tried to get very strong restrictions on GMOs because they're worried about small farmers being destroyed by agribusiness conglomerates coming in and just wiping them out. In Germany there's a huge grassroots farmer and consumer movement against GMOs. In Germany

you have a lot of natural foods and places where pesticides and chemicals are not used and it's very strictly regulated. It's not just a label that's put on. They are very, very strongly against GMOs and have more or less kept the liability on the farmer who *plants* the GMO, not on the farmer whose field happens to get contaminated by seed being carried through wind-borne transfer. Right now the present government in Germany, led by Angela Merkel, is going out of its way to mend fences with Washington, D.C., but they're mending fences with the *wrong* Washington, because they're more or less in lockstep with everything the Bush-Cheney administration wants them to do, including support for the introduction of widespread GMO planting. In France, for example, just a month ago you had the government scientific body upholding a ban on Monsanto MON 810, which is genetically modified corn, pending several-years-long independent testing of it. Indications are that it is unstable and not at all healthy and safe the way Monsanto claims. So there is a very lively debate going on in Europe. I would say that breaking down the European resistance to GMOs is now the number one priority of Monsanto, and they're exerting huge lobbying pressure in Brussels, which is easier to influence because they've been doing it for decades. In Europe you still have national laws that say you must identify if your food product contains more than 1 percent of genetically modified ingredients. In the United States since the 1990s it's been just the opposite. It's the most absurd thing. It's against the law to label your food product as containing GMOs, so most Americans have no idea that about 60 or 70 percent of their daily diet, whether it's a bowl of Kellogg's cornflakes or corn on the cob at KFC or a McDonald's cheeseburger that has at least one-third allowable soybeans — that all of it is genetically modified. And there are correlations of outbreaks of allergy epidemics in the United States with a possible link to the steady diet of

GMO food products in the American food chain now.

**ACRES U.S.A.** When you walk into the supermarket in Frankfurt, you actually have products on the shelf that are labeled as containing GMOs?

**ENGDAHL.** Yes. It's very small print, of course, but it's there. By law it has to be there if it's over 1 percent. Now the way that Monsanto and company have kind of gotten around this is they lobbied not to have meat labelled that comes from cattle fed GMO soy and corn, but a lot of the farmers now are beginning to link up to certified GMO-free soybean producers in places such as Brazil where the crop hasn't yet been totally contaminated. They're importing it and certifying that it's GMO-free and having independent tests run on the soy seed.

**ACRES U.S.A.** How would you rate the success of the popular resistance to the global GMO agenda?

**ENGDAHL.** The success has been quite strong. The Merkel government hasn't been able to push the Washington agenda on GMO after two and a half years, and they're trying at every turn. One of the ways they're trying to do it now is through this really lunatic policy of supporting ethanol or biofuels as a substitute for gasoline for transportation the same way that the Bush administration has suddenly discovered its green credentials by supporting biofuels in the United States with heavy government subsidies. Of course the big grain giants such as Archer Daniels Midland and the big oil companies just love this because it's not doing anything to solve any environmental problems. What it is doing is providing a huge upward spike in the price of basic foods throughout the world now, taking land out of agricultural cultivation and turning it into fuel farms, if you will.

For more information on William Engdahl, including samples of his writings, visit [www.engdahl.oilgeopolitics.net](http://www.engdahl.oilgeopolitics.net). His latest book, *Seeds of Destruction* (ISBN 0-97371-472-7

### **In Summary:**

- Monsanto have a long and very chequered history of producing highly toxic compounds and then hiding the truth to avoid any form of liability.

- Monsanto have a history of placing insiders into decision making government bodies to influence decisions their way. One of these decisions has allowed for the GM foods to avoid health scrutiny by having only to pass a “substantial equivalence” test.
- Almost every independent scientific trial of GM as food has shown worrying side effects and even death to the animals involved. All trials of course have been rejected by Monsanto. They even rejected the findings of two of their own trials, change the trial parameters until they got the result they wanted.
  - GM DNA has been found to pass from plant to animal and because of the use of antibiotics in gene exchange has been found to make some mouth and stomach bacteria resistant to antibiotics.
- Monsanto have only a commercial interest in all of their actions.
- Yield trials clearly demonstrate that GM has no yield benefits and in fact cannot keep pace with natural methods of plant breeding.
- Monsanto have applied to patent Animal genes, genes developed by selective breeding over thousands of years.
- Monsanto is one of the main sponsors of the huge Norwegian doomsday seed bank and also own the patents for ‘Terminator’ technology that could render seed unusable after one season. Terminator technology developed by Pioneer and Land in combination with the US government as a military tool to control the food supply of whole regions of the world.

### **Some further points:**

Monsanto have successfully sued farmers who have been found to have patented Round up ready canola growing on their properties through no fault of their own, and won.

In Western Australia, Non GM farmers taking their canola into CBH (Monsanto’s selected partner) must pay for a Monsanto patented test to prove they do not have GM RR canola DNA in their seed. If detected by a Monsanto agent they must pay a fine and forfeit their grain.

A company like Monsanto is a commercial organisation existing to make money for its shareholders only. The ultimate aim of a commercial entity is monopoly position. For an agribusiness company that is to monopolise agriculture. Controlling the seed, the land, the farmer, the collection, distribution and sale of the produce. Out there is the myth that the reason for GMOs is to feed a hungry world. It is not! It is to make money! And make it by any means necessary and from as many people as possible.

A reflection of this is in the subtle shift in naming of their enterprise from an agriculture based company to an agribusiness which occurred in the 1980’s.

The WA State Minister for Agriculture Mr Terry Redman has not responded to any questions that I have posed to him regarding GMOs, the safe guards, etc, His failure to respond and to explain his decision is surprising. Is he somehow beholden to the GM companies? I would like to think not. Is he out of his depth and confused by the science being fed to him by Monsanto? Am I as an individual not worthy of a considered response. The one and only response was a standard government speak, same reply to every one, no body to statements, no answers to questions posed, no soul, no conviction. As a concerned farmer and a voter in his electorate I have had to get my information from ABC radio’s country hour. I have found that the “trial” sites will exist in a strip from Geraldton to Albany in an area that stretches for some 900km. In this country we have seen many disastrous environmental decisions, none more relevant than the release of cane toads to control prickly pear released in QLD as they now enter our state, costing millions each year to control. Will our politicians ever have the

peoples interests held above that of a corporate entity? Where is the integrity, the honesty, the justice and the hope?

A true test is to let the consumers decide, hold a referendum or at the very least true, full food labelling needs to be legislated. Not as in some countries where it is only labelled if it contains above 1% GMO. It also needs meat and other products such as eggs and milk labelled if the animal had been fed GM seed or plant material. Consumers will soon decide. They will reject GMO if they knew they were eating it. This is why Monsanto is so opposed to labelling legislation.

How many GMO supermarkets do you find around the world?

Will you willingly grow and eat GM Foods, Having read the above?

Murray Brooker

Farmer

Western Australia