

~ Chapter 3 ~

**GMOs and rBGH:
The Things You Won't Find
Listed on the Label**



**“We are playing about with genetic structures
that existed for millions of years,
and the experiment is running out of control.”**

~Dr. Mae-Wan Ho, geneticist, Open University, Great Britain

“Can biotech change the world? Yes, but perhaps not in ways we’d like to see. If we want to change the world for the better, we should probably look elsewhere. Releasing genetically engineered plants, animals and even bacteria into the environment is a form of biological pollution. Like chemical toxins, you cannot call them back. But unlike chemicals, biological pollutants can multiply and spread and interbreed, and change the balance of nature on our planet. If there are better ways to solve our food problems, why should we take this path?”

—Martha Herbert, M.D.,

What Is Genetically Modified Food (And Why Should You Care)?, EarthSave Magazine, Spring, 2002



You may have seen the warnings on processed food packages: “This product was prepared in a facility that processes tree nuts,” or words to that effect.

In an age when increasing numbers of individuals—and children, in particular—are apt to suffer allergic reactions to certain foods (peanuts, for instance), such cautionary statements are intended to inform vigilant consumers that the products they are considering for purchase may have been “contaminated” with traces of the allergens—just enough, perhaps, to trigger a reaction that, in some cases, could be life-threatening.



But suppose that products, packaged with no warning labels or allergen alerts, actually contain substances capable of producing acute allergy-type symptoms? What if there are everyday products infused with insidious chemicals that could place the body's defenses on red alert, yet carry no label information to indicate the potential presence of such hidden components?

That, in fact, may now be the case with many of the conventional and processed foods that make up the typical American diet. What's more, the presence of those occult chemical components in our food—in the American dietary system, as it were—may help explain why allergy, asthma and food sensitivities have undergone such a sharp rise in recent years. Statistics at the end of 2005, for instance, showed that the number of American children suffering from life-threatening peanut allergies had doubled in just five years, and those with food allergies had risen from 6 million to 11 million.¹³

BYPASSING THE 'BRAVE NEW WORLD' OF GMOs

In 1932, Aldous Huxley's sci-fi classic "Brave New World" portrayed the rulers of a future Utopian society as having their subjects genetically engineered to contentedly fulfill certain roles. While we have not yet reached such a point, Huxley's bizarre vision of a future in which man manages to alter the very essence of the life forms created by nature is not entirely off the mark.



Today, in an ongoing effort to chemically engineer produce—striving to increase output and ease of

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cultivation—we are taking a chapter out of Huxley's vision of the future by infusing crops with certain unnatural, if not alien, traits. Unlike the type of cross-breeding traditionally done to improve various agricultural commodities, this particular procedure involves adding genes from other living things, in hopes of genetically introducing desired characteristics. The result has become known as a “genetically modified organism,” or GMO.

GMOs are created by either using various microorganisms as transfer agents for DNA or by means of a “gene gun” that is used to haphazardly shoot genes into a group of plant cells, at the risk of disturbing existing genes. Because only a very small number of the cells involved are actually transformed by either procedure, “marker genes,” usually of bacterial origin, are attached to the gene being inserted. These genes serve as markers by virtue of being resistant to antibiotics, which kill the cells except those that have been effectively modified. (More technical explanations of how these processes work are provided on the web by Macalester College of St. Paul, Minn. <http://www.macalester.edu/~montgomery/GMOs.htm>, which also explores the ethical issues involving GMOs, and Germany's Federal Ministry of Education and Research at http://www.gmo-safety.eu/en/gene_transfer/44.docu.html.)

While this is usually a matter of transposing the DNA from one type of plant to another, along with bacteria and viruses that would not normally be present, in some instances it has involved inserting animal and even human genes into certain crops.

Such deliberate mutations are the work of a number of companies, with one in particular—world-wide agricultural giant Monsanto—having developed



and patented more than half of the genetically engineered crops in the U.S.¹⁴ (Monsanto has also acquired some 50 or so seed suppliers.) Such companies, collectively referred to as the “biotech industry,” have succeeded in putting genetically modified ingredients—which include soy, corn and canola oil, soy, flour, soy lecithin, corn starch and high fructose corn syrup, to name but a few—into an estimated 70 percent of the foods we consume in America.

Considering how prevalent genetically modified, or GM ingredients become in our diet, one might suppose that GMOs have been subjected to thorough scrutiny by government agencies, like the Food and Drug Administration.

But the truth is they haven’t. That’s because there are currently no requirements that GMOs be tested to ensure they won’t adversely affect our health.

When we ingest GMOs and feed them to our children, we’re essentially accepting the safety claims of the manufacturers who profit from those products. We are, in effect, taking part in an ongoing collective experiment, the results of which may never be publicly known. However, what is being learned outside the realm of in-company communiqués should be enough to set off alarm bells.

The ‘Don’t Ask, Don’t Tell’ Policy of the FDA

Whenever something new is added to our food supply, it’s supposedly the job of the U.S. Food and Drug Administration to make sure an additive won’t have any adverse effects on the population. That, at least, is how it works in theory. The reality, however, is often quite different—





especially when a company that wishes to market a product wields political influence, as was demonstrated when the FDA approved the artificial sweetener aspartame over the objections of its own scientists. Monsanto would certainly qualify as such an FDA-influencing business, having had a number of its officials—in typical “revolving door”



fashion—go to work for the FDA (or the other way around), including Michael Taylor, who went from being an attorney for Monsanto to an FDA post, where he was largely responsible for government policy on GMOs. Taylor later returned to Monsanto, this time in an executive job.

The policy Taylor helped forge while with the FDA established that genetically engineered commodities are nothing more than extensions of long-existing practices of modifying agricultural products using conventional cross-breeding techniques involving varieties of the same species.

In 1992, the FDA ruled that foods altered in this manner were “substantially equivalent” to those that hadn’t been, and thus did not need safety testing. GMOs, it decided, were not food additives, so it was not necessary for manufacturers to submit a petition for approval before marketing them. The agency’s position was that there is “no basis for concluding that bioengineered foods differ from other foods in any meaningful or uniform way, or that, as a class, foods developed by the new techniques present any different or greater safety concern than foods developed by traditional plant breeding.”¹⁵

That decision has been widely condemned. For example, Steven M. Druker, executive director of the Alliance for Bio-Integrity, characterized the decision as being “unscientific, unethical, and unacceptable” and called for “every bioengineered food (to be) withheld from the market until proper testing has confirmed it is safe according to the standard required by law.”¹⁶



What the FDA’s ruling amounted to, in essence, was a “don’t ask” policy toward GMOs. But it didn’t stop there. Tacked on to that policy was a “don’t tell”

provision where consumers were concerned—meaning that there was no requirement that the possible presence of GMO ingredients be indicated on food labels. As a result, it might seem that there's really no way for us to know whether these supposedly innocuous, but genuinely sinister synthetics are lurking in our lunch or ending up on our dinner plates.

However, there may be one way savvy shoppers can be sure they're not serving up GMOs and such: buy certified organic products in which no genetically engineered ingredients are permitted. Of course, even when running with the "organic" banner, it may be impossible to be absolutely certain that anything is 100 percent GMO-free, as will be explained farther on.

The wider selection of organic processed foods that's become available on supermarket shelves, such as cereals, waffles, ketchup and tofu, is especially helpful in this regard, since most of the GMOs that have entered our food supply are found in conventional processed products.

Other than going into a full-blown organic mode, eliminating genetically altered foods from our diets can also be accomplished—at least to some degree—by avoiding non-organic foods most likely to harbor GM material, particularly those that contain soy, corn derivatives or canola oil. That's because soybeans, corn and canola, along with cotton, are the major crops that have had alien genes inserted in them by the biotech industry. Sweet corn, for the most part, is still unaffected, with genetically modified varieties estimated at only about three percent¹⁷—but the only way to be sure you're avoiding them is to either buy organically grown corn or grow it yourself.

But why should GMO intake be a cause of



concern to us? To find out, we need to take a closer look at the very real risks to our health that such tampering with Mother Nature's grand design may be creating, along with the effects it's having on the environment and agriculture, here in the U.S. and abroad.

How What We Don't Know *Can* Hurt Us and Our Kids (Without Our Knowing It)

Biotech corporations, with the backing of the FDA, like to portray genetic engineering as a thoroughly safe, innocuous and beneficial process that can only make life better for both farmers and consumers. But a cursory background check of this relatively new and alien technology paints a very different—and disquieting—picture.

If anything should have given federal watchdog agencies pause about the advisability of allowing genetically engineered products on the market, it was what happened in 1989 when eosinophilia-myalgia syndrome, a strange new disease that affects the blood and muscles, began afflicting thousands of people. The condition, which ultimately resulted in 38 deaths and 1,500 cases of disabling illness, was traced to a contaminated lot of the dietary supplement L-tryptophan, manufactured by a Japanese chemical firm that had infused it with genetically altered bacteria to increase its potency. But instead of raising concerns about the possibility that genetic engineering might have dangerous, unintended consequences, the tragedy caused



attention to be focused on the perceived risks of amino-acid food supplements, resulting in a decade-long ban on most of the tryptophan being sold in the U.S.

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In the years since, as more and more farmers have been persuaded to abandon traditional planting in favor of GM seeds—which the FDA arbitrarily decided were virtually no different than what they had previously grown—scientists began reporting some disturbing results of the tests that were performed on these “Frankenfoods,” as opponents such as Greenpeace took to calling them. For example:

- Soybeans to which were added a gene from a Brazil nut caused serious reactions in individuals with nut allergies, as reported by the *New England Journal of Medicine*—a development that resulted in one engineered soybean product being cast aside.¹⁸
- A study performed by two scientists under a grant from the Scottish government, and reported by the British medical journal *The Lancet*, found significant detrimental effects on the organ development, metabolism and immune function of rats that had been fed potatoes genetically engineered to contain the biopesticide *Bacillus thuringiensis* (B.t.).¹⁹
- An attempt by Australian researchers to transfer a gene for a pest-resistant protein from beans to peas was abandoned after the protein from the peas, which is harmless in its natural state, caused mice



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to suffer airway inflammation and allergic lung damage.²⁰

- A German researcher, in a three-year experiment involving young honeybees and rapeseed that had been genetically engineered to resist a particular herbicide, discovered that the inserted gene transferred to bacteria and fungi in the bees' intestines via ingested pollen from the altered rapeseed.²¹
- Rats fed a genetically modified tomato developed stomach lesions, with seven out of 40 dying within two weeks, while chickens fed genetically engineered corn reportedly died at twice the rate of those fed non-altered corn.
- Genes inserted in soy were found to have transferred into the gut bacteria of human test subjects.

Those last two items were among a number of effects of genetic tampering cited in the documentary video "Hidden Dangers in Kids' Meals: Genetically Engineered Foods," put out in 2005 by the Institute for Responsible Technology, whose founder, Jeffrey Smith, is a leading critic of GM foods. Smith has also authored a book on the subject, "Seeds of Deception," which chronicles how skeptical scientists were coerced or intimidated, government employees who questioned



the technology harassed or dismissed, and evidence manipulated to remove obstacles to the marketing of GMOs.

“Tragically, children are most at risk from the potential dangers of genetically engineered foods,” Smith warns in the documentary.

Also featured in the video is the Alliance for Bio-Integrity’s Steven Druker, who notes that FDA documents had revealed an “overwhelming consensus” by agency scientists that “genetic engineering is inherently hazardous...and every food that’s been genetically engineered has to be carefully safety tested because it runs the risk of harboring unintended harmful substances, such as new poisons, new allergens.”

Such concerns are not merely theoretical. In the video, Smith highlighted the negative impact that genetically modified soy had when introduced in Great Britain. “Soy allergies skyrocketed 50 percent,” he said.

But that should have come as no surprise, for as Dr. Vyvyan Howard, an authority in the field of infant toxico-pathology at Liverpool University Hospital, has pointed out, “Swapping genes between organisms can produce unknown toxic effects and allergies that are most likely to affect children.”²²

Perhaps most disturbing to critics of genetically altered foods is the threat these chemicals pose to infants and toddlers. Michael Meacher, the UK’s former minister of the environment, has noted that “breast-fed infants can be exposed via the mother’s diet, and fetuses may possibly be exposed in the womb.” In addition, “any baby food containing GM products could lead to a dramatic rise in allergies.” Among the concerns Meacher has voiced are the



TRADING A TOXIC REPUTATION FOR AN IDYLIC IMAGE

In our mentions of Monsanto, the corporation that holds hundreds of patents for genetically modified seeds and pledges to “help farmers around the world be successful” and “produce healthier food,” we want it to be clear that we’re referring to a relatively new “agricultural company”—one not to be confused with the “old” Monsanto.

That “old” Monsanto was a chemical company formed a century ago—a company whose manufacturing and disposal practices have from time to time had some rather toxic repercussions.

At its plant in Nitro, W.Va., for instance, where the toxic chemical dioxin was a byproduct of the manufacturing of herbicides that included Agent Orange, the powerful defoliant used in Vietnam, some of these practices resulted in lawsuits brought by both ex-employees and residents. In 1988, the company settled with workers who claimed they had suffered long-term health problems. The plaintiffs were given \$1.5 million. More recently, a lawsuit has been brought against the company by residents over dioxin pollution, which has spread to area waterways and fish.

From the 1930s until 1971, the “old” Monsanto also carelessly disposed of industrial waste from the manufacture of cooling and insulating fluids containing polychlorinated biphenyls (PCBs) at its Anniston, Ala. plant. PCBs are extremely harmful chemical compounds, which



persist for many decades once loosed on the environment. In addition to being classified as probable carcinogens, they can cause a wide range of serious health problems, especially the skin condition known as chloracne, and can increase the risk of almost all major diseases, including heart disease and diabetes, according to Dr. David Carpenter, a professor of environmental health at the State University of New York in Albany.²⁵

The “old” Monsanto’s dumping in the vicinity of the plant resulted in an environmental trickle- down effect, as the PCBs entered the biosystem, ultimately impacting the human community. The company eventually settled with 21,000 residents for \$550 million and agreed to conduct a massive cleanup—but Monsanto’s old Anniston site remains one of the most polluted in the U.S. Many of the residents in that vicinity will have the PCBs in their bodies for the rest of their lives.²⁶

The “old” Monsanto, incidentally, now goes by another name—Solutia. However, some leaders of the “new” Monsanto, according to its web site, may have had “work experience” with the “old” Monsanto.

possibilities that unexpected estrogen level changes in the GM soy used in infant formula “might affect sexual development in children” and that “even small nutritional changes could cause bowel obstruction.”²³

Martha Herbert, a pediatric neurologist at Harvard Medical School, has offered an explanation of how tampering with DNA can lead to such problems.



“Plants and animals ‘process’ proteins after they are produced by adding starch and other molecules that affect how the proteins function. Not all species do this in the same way. Different ways of processing proteins can lead to changes in function or changes in potential for allergy,” she notes.

Genetic engineering, according to Herbert, “can change the metabolism of a plant or animal. Proteins may be produced in increased quantities. Proteins that in small quantities were safe may now even exceed toxic levels. New proteins may be produced that were not produced before,” Herbert has also cautioned that the use of antibiotic-resistant “marker genes” to

**A WEIRD NEW DISEASE APPEARS—
AND GMOS ARE PRIME SUSPECTS**

Since they were first introduced on the agribusiness scene a few years ago, we’ve been repeatedly reassured that genetically modified organisms (GMOs) would have no adverse impact on our health. Their only effects, or so we were told, would be to make crops hardier and keep them from being damaged by things like the Monsanto herbicide Roundup[®], which is used to kill weeds. (Monsanto, it should be noted, also owns the GMO technology involved).

But are they really?

Early in 2008, the giant health-care firm Kaiser Permanente was given a \$300,000 grant by the U.S. Centers for Disease Control and Prevention (CDC) to study a strange new ailment known as Morgellons disease,



symptoms of which an increasing number of people were reporting. The previous year, some 10,000 families with one or more members suffering from this bizarre affliction had registered with the Morgellons Research Foundation, a nonprofit organization established in 2002 in honor of a two-year-old child with an unknown illness, which his mother labeled “Morgellons disease”.

The most startling and consistent symptom of this condition is the appearance of odd skin lesions that produce tiny blue, red and black fibers with the consistency of strong, pliable plastic. Sufferers frequently complain of a sensation of bugs crawling beneath the skin. Some patients report feelings of chronic fatigue and depression, short-term memory loss and changes in vision.

When a research team from Oklahoma State University examined fibers from different Morgellons disease victims, they found that the fibers, while all quite similar, bore no resemblance to any ordinary environmental fibers.

Meanwhile, another study done by a biochemistry and cell biology professor at New York’s Stony Brook University determined that the fibers contained the substance *Agrobacterium*, described as “a genus of gram-negative bacteria capable of genetically transforming not only plants, but also other eukaryotic species, including human cells.”²⁷

The findings have given rise to speculation that Morgellons may be linked to GMOs in our food supply—a theory that has yet to be proven, but will undoubtedly become the subject of a good deal more research.



determine if the genetic transfer was successful, by introducing such genes into intestinal bacteria, may amplify the already growing problem of antibiotics losing their effectiveness. As a result, “(d)iseases that once could be treated by existing antibiotics may now become resistant to treatment.”²⁴

Adding to the considerable risks involved in transferring genes from one organism to another is the fact that genetically engineered crops tend to be treated with even greater amounts of toxic chemicals than their non-GM counterparts. And that’s something that’s good for neither consumers nor the environment.

Where Have All the Soybeans Gone?

An estimated 90 percent of the soybeans harvested in the U.S. alone have been genetically engineered—mostly by being made “Roundup Ready”[®]. That means they’ve been altered to withstand the effects of the Monsanto herbicide Roundup[®], whose active chemical ingredient, glyphosate, would ordinarily kill the crop along with the weeds that are its intended target.

Some of the effects of glyphosate were summarized in a report by The Independent Science Panel on GM, a group comprised of dozens of prominent scientists from seven countries who convened in London in 2003. It characterized glyphosate as “the most frequent cause of complaints and poisoning in the UK”—one for which “disturbances to many body functions have been reported after exposures at normal use levels.”



The report further noted that “exposure nearly doubled the risk of late spontaneous abortion, and children born to users of glyphosate had elevated

neurobehavioral defects.” The report also described the herbicide as (among other things) retarding development of the fetal skeleton in laboratory rats and being “genotoxic (harmful to cell genetic material and causing possible mutations) in mammals, fish and frogs,” and noted that “Roundup caused cell division dysfunction that may be linked to human cancers.”

Apart from its negative effects on health, glyphosate resembles insecticide in that it tends to gradually become less effective the more it’s utilized. The result, according to Bill Freese, science policy analyst for the Washington, D.C.-based Center for Food Safety, has been “an epidemic of weeds that have become resistant to glyphosate.” Consequently, he noted, soybean farmers have begun using it in greater quantities—along with “other nasty herbicides, some even more toxic,” such as 2,4-D and atrazine.

In fact, data supplied by the USDA, as posted by the Center, show a 15-fold increase in the use of glyphosate on soybeans, cotton and corn—from 7.9 million pounds to 119 million pounds—during the period from 1994 to 2005, when Roundup Ready versions of these crops were introduced.²⁸ Freese calls it “a perfectly example of how bad agriculture drives more chemical use.”

The emergence of herbicide-resistant “superweeds” has also been helped along by a phenomenon known as “biological pollution,” in which genes inserted in crops to enable them to withstand applications of glyphosate and other herbicides actually spread to other plant life—including adjacent weeds. There is also concern that such genetic transfers “may transform wild/weedy plants into new or more invasive weeds,” according to Professor Miguel A. Altieri of the University of California at Berkeley.



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“The movement of transgenes beyond their intended destinations and hybridization with weedy relatives and contamination of other non-GM crops is a virtual certainty,” Atieri contends. “Removing or recalling genes once they have escaped into natural gene pools is impossible.”²⁹

As a result, whereas in the year 2000 there were no documented cases of weed resistance to glyphosate in the Corn Belt, by 2008, Roundup-resistant weeds were being reported on some 2.4 million acres of farmland in the U.S.³⁰

But that’s not the only impact that such transgenic contamination has had on the environment. Cross-pollination with GMOs, it seems, also threatens the integrity of non-genetically engineered crops.

In 2005, Australian environmentalists said their country was facing “the most serious genetic contamination event” in its history after it was confirmed that low levels of genetically modified canola had been found in non-GM canola.³¹ In Mexico, where corn originated and where growing GM versions has long been banned, evidence of contamination from genetically altered U.S. corn has been discovered in native maize varieties cultivated in remote areas, alarming both farmers and environmentalists.

The dissemination of transplanted genes is even seen as somewhat problematic for organic agriculture, since organic certification depends on being able to guarantee that a crop harbors no GM material, and there are no restrictions on where GMOs can be cultivated.

The issue of such cross-contamination resulted in an unsuccessful attempt in 2007 by organic farmers in the Canadian province of Saskatchewan to file a class-action suit against Monsanto’s Canada affiliate and



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Bayer CropScience³²—although a more recent lawsuit in regard to the effects of Roundup Ready alfalfa on the organic variety did initially succeed in keeping the Monsanto crop from being planted.

But perhaps of greatest concern to environmentalists is the emerging threat that GM technology poses to biodiversity in Third World countries.

By encouraging the consolidation of land, they charge, the planting of genetically engineered crops is displacing small farmers and threatening food security in places with subsistence economies. This trend, according to Professor Altieri, “rapidly leads to enormous rural-urban migration, social problems, and the penetration of agriculture by foreign capital.”³³

The proliferation of genetically engineered crops has also disrupted the culture of rural communities here in the U.S., according to a number of media accounts. In one article titled “Harvest of Fear” that ran in the May 2008 issue of *Vanity Fair* magazine, the investigative reporting team of Donald L. Barlett and James B. Steele described how Midwestern farmers have been harassed, spied on and intimidated by what are often referred to as the “seed police.” The term refers to agents sent by Monsanto to make sure that GM seeds are repurchased from year to year as contract terms dictate, rather than simply used from previous crops, as has traditionally been done. A number of farmers have been either threatened or served with lawsuits—including some who do not even use GM seeds, but who may simply have had a patented seed variety accidentally blow onto their property and take root.³⁴

It may be true that at this point, most, if not all, of the soybeans in the country—and many more



Trickster

**THE TRANSGENIC CORRUPTION
OF A NATURAL PESTICIDE**



Biotech firms like to make the claim that using genetic engineering to add a gene from the soil organism *Bacillus thuringiensis* (Bt), which acts as a natural pesticide, to corn and cotton crops has helped reduce the use of chemical pesticides. A recent study by Purdue University entomologists, however, found “troubling signs” that target insects such as rootworms were becoming resistant to

the Bt through exposure to so-called “volunteer corn”—maverick plants with reduced levels of the toxin produced from the seed of the previous year’s crop.³⁵

Such findings bear out a concern expressed by the Organic Trade Association in April 2004, when it noted that “(s)tudies suggest that these plants will eventually produce insect pests that are unaffected by Bt,” rendering it useless as an insecticide for non-GM crops. (Although Bt is an approved biological pest control, it is used only sparingly by organic farmers.)

Some experts have also speculated that exposure to Bt-infused plants may harm non-target



insect species, such as monarch butterflies that feed on neighboring plants.

But the most worrisome aspect of inserting Bt genes into crops may be its effect on people. A report from the Iowa-based Institute for Responsible Technology notes that the Bt toxin produced in GM crops is “vastly different” from the ones used in traditional and organic farming and forestry and “about 3,000-5,000 times more concentrated than the spray form.”

“If Bt genes relocate to human gut bacteria,” the Institute warns, “our intestinal flora may be converted into living pesticide factories, possibly producing Bt-toxin inside of us year after year.”

The report also cites a warning from the United Kingdom Joint Food Safety and Standards Group that genes from the inhaled pollen produced by Bt-modified crops might transfer into the DNA of bacteria in the respiratory system. It goes on to describe a 2003 occurrence when the residents of an entire Filipino village were struck by mysterious skin, respiratory and intestinal reactions during the time that an adjacent Bt cornfield was pollinating, with blood samples from 39 of them showing antibodies in response to Bt toxin. It further notes that agricultural workers in India developed allergic reactions when exposed to Bt cotton, but not natural varieties.³⁶ So while the biotech industry might appear to have borrowed the idea of using a “natural” pesticide from organic agriculture, it may only have succeeded in making that approach ineffective—while rendering it hazardous to humans.



soybeans throughout the world—have gone to variations on mutations engineered by Monsanto and its corporate compatriots, as have a substantial part of America’s corn, cotton and canola crops. But other attempts at genetic engineering have been increasingly rejected by the food industry itself—thanks in large part to the pressures exerted by aroused consumers in locales across the sea.

Opposition Grows to GMOs

If you think there’s nothing that you can do to stop the biotech industry from genetically altering crops or dictating the manner in which they can be cultivated, you may be underestimating your own power to help influence the course of events. As a shopper, you make the purchasing decisions that affect the way food companies do business. Such individual choices have already gone a long way toward countering the money and political influence of corporations like Monsanto in their attempts to effectively control the very nature of our food supply and the way it’s produced.

Since genetic engineering of crops first began to be commercially utilized back in the 1990s, a growing and well-informed opposition movement has succeeded in substantially hindering this risky technology from making additional agricultural inroads. Such resistance has been especially effective in Europe and other locales abroad where much tighter restrictions have been placed on GMOs than in the United States. This consumer backlash in major export markets has caused many food processors to shy away from them.



As a result, a number of biotech projects have been stopped dead in their tracks, while others have been reduced in scope—not by regulation (as they

should rightly have been), but by the mandates of the marketplace. For example:

- Genetically engineered potatoes were taken off the table by Monsanto in 2001 after a number of processed-food corporations—including McDonald's, Burger King and McCain's—said “no thanks.”³⁷
- GM sweet corn has been rejected by Del Monte and other food companies, while Frito-Lay (a division of Pepsico) has helped reduce production of genetically altered field corn (the kind sold for processing) by requiring its contract growers to grow only none-GM varieties as a way of “playing it safe.”³⁸
- Genetically altered wheat had to be scrapped by Monsanto in 2004 due to farm groups' concerns about the loss of export business in the European Union, much like what happened to GM flaxseed three years earlier after European customers told Canadian growers that they didn't want it.³⁹
- Studies being conducted by the University of Hawaii as a prelude to outdoor trials of GM coffee were scuttled in 2004 after objections were raised by coffee growers



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concerned that their crops might become contaminated by cross-pollination and negatively impact sales.⁴⁰

- In 2007, The Center for Food Safety and other groups won a lawsuit in San Francisco U.S. District Court against the U.S. Department of Agriculture (USDA), whose plant Health Inspection Service oversees GM open-air field trials and has the power to deregulate seeds as it sees fit. The court ruled that the agency had failed to do a thorough evaluation of the impact of Roundup Ready alfalfa before deregulating it, failing to consider its potential impact on organic alfalfa growers and on the development of glyphosate-resistant weeds.

But the battle to keep additional crops from having their DNA altered is an ongoing one. In early 2008, for instance, lawyers for environmental, agricultural and consumer advocacy groups posed a legal challenge to the USDA's deregulation of Roundup Ready sugar beets. The plaintiffs in the case sought to have a thorough assessment of environmental, health, and associated economic impacts of the deregulation undertaken, as federal law requires, citing a threat of cross-pollination of non-GM sugar beets, as well as nearby crops of table beets and chard.⁴¹



A few years ago, it appeared that the GM sugar beet had been effectively derailed when sugar refiners warned farmers to steer clear of it because Japan, the

main customer for this commodity, wouldn't accept a genetically altered product.⁴² Yet there it was back again in 2008, available just in time for spring planting. "But if the experience of the last decade is any indication," according to Jeffrey M. Smith of the Institute for Responsible Technology, "such a move will lead to huge economic losses for the sugar industry and even for U.S. food companies who use sugar as an ingredient." For no matter how economical such a crop may seem, Smith believes it "will thrust the sugar industry, and all manufacturers who use sugar, into the gathering storm of resistance to GM foods."

In Smith's view, the general lack of awareness about the dangers posed by GMOs in the U.S. may be coming to an end. And when it does, he predicts, particularly in the event that mandatory labeling is adopted here, we will begin seeing a mass rejection of products with genetically engineered ingredients similar to that taking place in Europe.

"The tipping point does not require that a majority of shoppers reject GM foods," he maintains. "If even a small percentage started switching brands based on GMO content, major companies would respond. After all, the products don't gain anything from using them. Their foods aren't fresher, tastier, or healthier."⁴³

MILKING THE DAIRY INDUSTRY FOR UNHEALTHY PROFITS

While there are encouraging signs that U.S. public opinion is gradually turning against the marketing of GM foods as consumer awareness grows of the risks they pose, another genetically altered "sinister synthetic" seems



to have already received a collective cold shoulder. From all indications, Americans seem to have resoundingly rejected the practice of injecting dairy herds with growth hormone—or, more precisely, recombinant bovine growth hormone, otherwise known as rBGH or rBST.

Like GM seeds, rBGH (marketed under the name Posilac[®]) is a product of Monsanto biotechnology—one that also was given a green light by the FDA during the time when former Monsanto counsel and vice-president-to-be Michael Taylor was playing a key role in shaping the agency's policies toward such substances. It's designed to stimulate cows to produce more milk, something accomplished by adding a molecule of the amino acid methionine to their natural growth hormone.

Not that there was a milk shortage when rBGH was approved for use in 1993. In fact, as Oregon Physicians for Social Responsibility points out on its web site, hundreds of thousands of dairy cows have been slaughtered on several occasions since then because of a glut of milk on the market.⁴⁴ The sole purpose of the engineered hormone is to generate additional revenue for Monsanto and those dairy farmers who choose to use it.

Unfortunately, that extra profit for the manufacturer and users of rBGH has come with costs to society (as well as many farmers) that weren't factored into that approval.

How Growth Hormone May Put Both Cows and Consumers at Risk



Critics of the marketing of rBGH to dairy farmers have not one, but three bones to pick with the proponents of

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using the chemical. Topping the list is the possibility of an increased risk of various types of cancer that they believe its use could bring about.

For years, scientists have hypothesized that rBGH significantly increases the levels of another growth hormone, Insulin-Like Growth Factor-1 or IGF-1, in cows' milk. The implications of this were explained in an open letter to the FDA's chief counsel in July 2007 by two representatives of the Oregon Physicians for Social Responsibility (OPSR), Chief Scientific Advisor Martin Donohoe, M.D., and Campaign for Safe Food Project Director Rick North, who were responding to Monsanto Chief Counsel Brian Robert Lowry's complaint to the FDA that dairies using "no rBGH" labeling were misleading the public.

While acknowledging that IGF-1 is necessary for growth and development and is present in both cows and humans, Donohoe and North noted that "both laboratory and epidemiological studies have demonstrated that elevated levels of IGF-1 are associated with increases in several types of cancers in humans," including breast, prostate and colon cancer.

"Some argue that rBGH-induced IGF-1 is not a cancer risk because the body produces far more IGF-1 than can be taken in by dietary sources," the letter writers observe. However, even very small amounts of hormones can have major implications for human health, especially if consumed over long periods of time or at critical stages of growth and development (infancy, puberty, etc.). Moreover, several studies have shown that dietary intake of IGF-1 can indeed have an effect on human health.

Donohoe and North also pointed out that the FDA's approval of rBGH "was one of the most



controversial decisions it has ever made, with widespread criticism from government leaders, farmers and numerous scientists, including several within the FDA,” adding that “(s)cientific evidence accumulated since then only reinforces the human health concerns with this drug.”⁴⁵

Also at issue are the adverse effects that rBGH can have on the health of the cows injected with it. Problems include mastitis, a painful udder infection, along with 15 other conditions (including pus in milk) that, according to Donohoe and North, are all potential problems listed on Monsanto’s own package insert.⁴⁶ These conditions, in turn, are apt to be treated with antibiotics such as penicillin, amoxicillin and erythromycin, resulting in the proliferation of antibiotic-resistant bacteria.

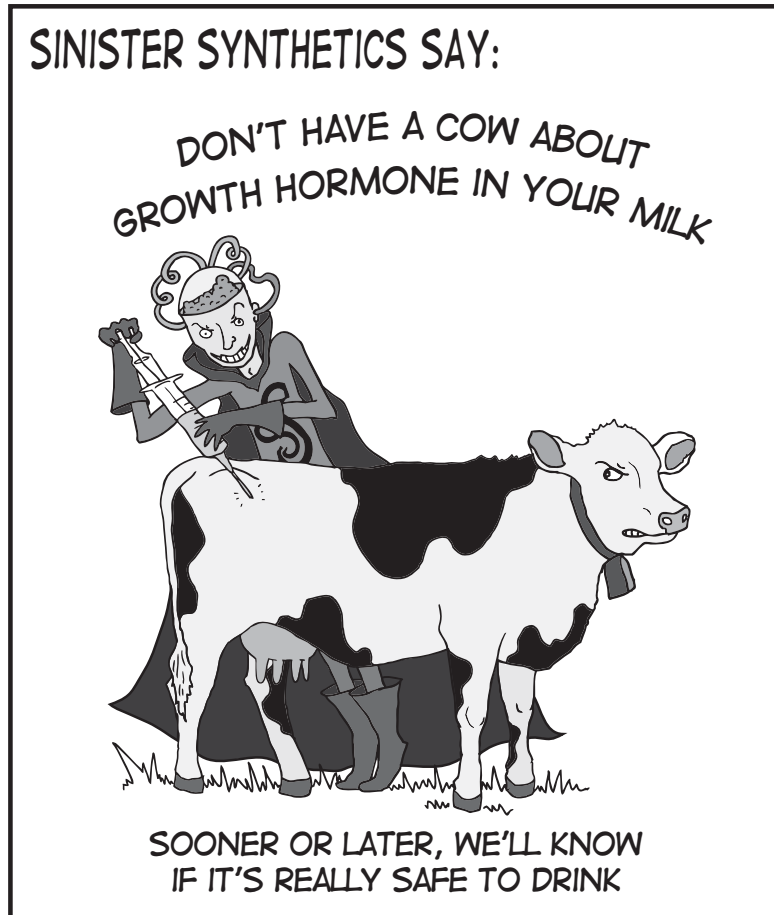
Such concerns, in fact, have been enough to cause Canada, Australia, Japan, New Zealand and the European Union to disallow the use of the drug, according to a brochure put out by OPSR.⁴⁷

A Failed Attempt to Keep Consumers in the Dark

Had it not been for the efforts of anti-rBGH activists, however, American consumers might have remained oblivious to the fact that the hormone posed such risks—or even to the fact that farmers were using it at all, given that no regulation requires that it be mentioned on the labels of dairy products.

But as public awareness of these issues has grown, an increasing number of dairies have actually begun labeling their products to indicate that they are BGH-free—a trend that Monsanto and its agents and allies have consistently attempted to have muzzled.





Monsanto first got in touch with the Federal Trade Commission, alleging that notices to this effect, by "falsely claiming that there are health and safety risks associated with milk from rBST-supplemented cows," constituted "deceptive advertising and labeling practices."⁴⁸ When this tactic failed to cut any ice with either the FTC or the FDA, the company began trying to get individual states to prohibit such



labeling—a drive that might have succeeded in Pennsylvania had not the governor himself intervened (see box).

But then, Monsanto has a history of trying to keep consumers in the dark about rBGH and the controversy surrounding it. A decade ago, in fact, it succeeded in halting the airing of a major investigative series on the subject by a Fox TV outlet in Tampa, Fla. The company's communications with station management also resulted in the firing of Steve Wilson and Jane Akre, the award-winning investigative reporting team that had spent a year preparing it, who subsequently sued the station, winning a jury verdict that a state appeals court subsequently overturned. But their efforts did not go unrecognized, eventually making them the recipients of the prestigious Goldman Environmental Prize—and helping bring a lot of well-deserved attention to the issue in the process.

The strategy of OPSR and other groups has been to counter such attempts at censorship by “going directly to the public,” says North. “You make up your own mind and vote with your dollars.”

And it appears to have been working. Despite the FDA's official position that the use of rBGH is safe and the accompanying lack of a labeling requirement, “I would say that most of our surveys have found 50 to 60 percent of consumers know something about this subject,” he maintains.

As a result, a number of major food chains, such as Wal-Mart and Kroger, are now offering dairy products that are rBGH-free. And the number of cows that are injected with Posilac[®] in the U.S., North says, has dropped from 22 percent to 17 percent of the total.



The good news is that, unlike GMOs, should the practice of injecting dairy herds with rBGH be ended entirely, it would have no lasting effect on the food supply, he notes.

All the while, of course, purchasers of organic products have enjoyed the distinct advantage of not having to be concerned whether or not their families are being exposed to any possible risks associated with rBGH. But not having to worry about “Sinister Synthetics,” such as drugs, GMOs and toxic pesticide residues in your food, is not the only benefit of going organic, as you’ll discover in the chapter that follows.

**GOT HORMONE-FREE MILK?
(THE ANSWER IS NO LONGER A SECRET
IN PENNSYLVANIA)**

Concern that the use of rBGH might increase the risks of breast, colon and prostate cancer didn’t stop Pennsylvania officials from attempting to conceal from consumers information about which brands of milk didn’t come from cows treated with the hormone. That appeared to be the purpose of an edict issued by the state Department of Agriculture at the beginning of 2008 forbidding dairies to label their milk as rBGH-free.

What did stop them was pressure from consumer groups—some 65 of which protested the proposed labeling ban in a letter to Governor Ed. Rendell, who responded by noting that “the public has a right to complete information about how the milk they buy is produced.”

As a result, new guidelines were issued by the



Chemical-Free Kids: The Organic Sequel

agriculture department late in January rescinding the ban and permitting dairies to label milk as rBGH free (although requiring them to document their claims along those lines). The development was hailed by Michael Hansen, a senior scientist with the Consumers Union, as “a victory for free speech, free markets, sustainable farming and the consumer’s right to know.”

It may also help to discourage similar bans that were being contemplated by several other states that were closely watching the situation in Pennsylvania. But whether or not such a ban goes into effect anywhere else, consumers can be assured that their milk is rBGH-free simply by purchasing the kind labeled as certified organic.

