

# HEALTH RISKS OF GENETICALLY ENGINEERED FOODS



## **Genetically engineered foods may pose health risks**

When food products have a component added to them, they are evaluated under strict food additive regulations which require mandatory pre-market testing. Food and color additives undergo strict testing outlined by the National Research Council to ensure safety, and products are accurately labeled. Yet genetically engineered crops, which have genes added to them that produce new proteins, are exempted from pre-market testing. Added genes can create new toxins in plants, or elevate existing levels of toxins to dangerous amounts. Further, genes are being added to plants that have never been part of the human diet before and have not been adequately tested for their ability to cause allergies.

Genetically engineered crops have been on the market for several years, yet testing for human health risks is not required and very few studies have ever been published that truly examine their safety for human consumption. Under intensive lobbying by Monsanto and other biotechnology companies, the Food and Drug Administration decided before any products had reached the market in 1992 that genetically engineered foods did not require any mandatory pre-market safety testing. This system of voluntary oversight has been in place since, despite the lack of evidence that the crops are, in fact, safe.

"Over the last fifteen years, I and other scientists have put the FDA on notice about the potential dangers of genetically engineered foods. Instead of responsible regulation we have seen bureaucratic bungling and obfuscation that have left public health and the environment at risk."  
-- Dr. Philip Regal, Professor of Ecology, Evolution, and Behavior at the University of Minnesota.

Despite the lack of data about safety, genetically engineered ingredients are already in approximately 60% of processed foods, mostly in the form of soy and corn. So even without adequate testing, most of us are already eating genetically engineered crops, largely without our knowledge or consent.

Here are some facts about genetically engineered food.

"U.S. government agencies have done exactly what big agribusiness has asked them to do and told them to do." -- Dr. Henry Miller, who was responsible for biotechnology issues at the Food and Drug Administration from 1979 to 1994.

## **New Food Allergies**

Genetically engineered crops are frequently manufactured to make proteins that have never been part of the human diet before, which makes testing for allergenicity difficult. One of the basic tests conducted to determine whether a crop would produce allergies is to compare the inserted gene with other genes known to cause allergies, and see if there is similarity. This test has not been conducted for any of the genetically engineered corn varieties currently on the market.

Genetically engineered corn is most often engineered with *Bacillus thuringiensis* (Bt), a naturally occurring soil bacterium that has been used in spray form for decades. As an external spray, Bt breaks down quickly in sunlight and is seen as very benign. However, proper research has not been done to determine if splicing Bt into the corn and ingesting it is safe. In research published in 1999 and co-authored by EPA, the authors admit that the potential allergenicity of Bt crops has not been evaluated. The study found that farm workers, who regularly handle genetically engineered corn, did develop allergic reactions to Bt. This vital finding is critical to determining the safety of Bt corn and whether people would develop reactions to genetically engineered foods containing Bt. However, EPA has never followed up on this research to conduct the necessary studies.

StarLink is the trade name for a variety of corn that was not approved for human consumption because of concerns it would cause allergies. Despite this, it appeared on supermarket shelves, and over 200 consumers have complained of allergic reactions after consuming corn products. Tests are still being conducted to deter

mine if StarLink was the culprit. One of the major signs StarLink might cause allergies is that the Bt protein engineered into it has two of the major signs of allergenic proteins: resistance to heat and digestion. Other approved varieties of genetically engineered corn share these characteristics, raising concerns that they too might cause allergies.

## **Safety of genetically engineered milk for animals and humans**

One of the first products of genetic engineering was Monsanto's recombinant Bovine Growth Hormone (rBGH), which is injected into cows to force them to produce more milk. In the early 1990s, Monsanto-funded research was leaked by a University of Vermont (UVM) veterinary pathologist that demonstrated severe health problems in cows injected with rBGH, including mastitis and deformed births. When the investigative arm of Congress, the General Accounting Office (GAO), tried to research the matter, they ultimately terminated the investigation, concerned that Monsanto had the time to manipulate the questionable data.

The genetically engineered hormone is also linked to elevated levels of insulin-like growth factor (IGF-1) in milk, and there is evidence of a link between elevated levels of IGF-1 and human cancers. Dr. Richard Burroughs, the man at FDA in charge of the review of rBGH for five years, has since said that the agency "decided to cover up inappropriate studies and decisions," and agency officials "suppressed and manipulated data to cover up their own ignorance and incompetence." A review by Health Canada, the Canadian equivalent of the FDA, found in a 1998 report that human health risks of rBGH were not adequately explored, and that Monsanto's own data showed that adverse effects were detected in feeding studies on rats. The Canadian scientists concluded that "procedural and data gaps were found which fail to



properly address the human safety requirements of this drug.” The genetically engineered hormone is not allowed in Canada or any other industrialized country in the world besides the United States.

### **Research Raises Serious Health Questions About Genetically Engineered Foods**

Experiments on the safety of genetically engineered foods were conducted at Scotland's Rowett Research Institute and led by Dr. Arpad Pusztai, a world renowned scientist who has published over 280 scientific articles and three books. The studies looked at the safety of genetically engineered potatoes and found that, compared with rats that were fed ordinary potatoes, ones that ate genetically engineered varieties had significantly thicker intestinal walls, thinning of tissues in the large intestine, and an increase in white blood cells in intestinal linings. The study, one of the very few to be published in the scientific literature, suggests that the process of genetic engineering made the potatoes toxic.

### **Increased Exposure to Chemical Use**

Soybeans and corn have been genetically engineered to withstand blasts of toxic herbicides, primarily Monsanto's Roundup. Since the introduction of genetically engineered soybeans, use of Roundup has increased. Laboratory studies on glyphosate, the chemical basis of Roundup, have found adverse effects, including medium and long-term toxicity, genetic damage, effects on reproduction, and carcinogenicity. In studies of people, primarily farmers, exposed to glyphosate herbicides, exposure is associated with an increased risk of miscarriages, premature birth, and the cancer non-Hodgkin's lymphoma. EPA's tolerance level for glyphosate, which was set at 6 parts per million in the 1980s, was increased to 20 parts per million when Monsanto began moving these Roundup Ready crops to market. Further, because these crops can withstand large amounts of spraying, the likelihood of an increase in pesticide use is great. One recent study by Dr. Charles Benbrook found that chemical use went up as much as 30% in some growing regions.

"Monsanto should not have to vouchsafe the safety of biotech foods." –Phil Angell, Monsanto's Director of Corporate Communications

### **Loss of Nutrition**

One of the health benefits often attributed to soybeans is their high levels of phytoestrogens, which research suggests may protect against breast cancer, osteoporosis, and heart disease. However, research published in 1999 revealed that genetically engineered soybeans have significantly less phytoestrogens than conventional varieties. In addition, Monsanto's own research shows that their genetically engineered soybeans contain about 28% more Kunitz trypsin inhibitor, a known antinutrient and allergen.

### **Antibiotic resistance marker genes**

Because genetic engineering is such an imprecise science, scientists use a "marker" gene to help them determine if the gene they are trying to insert into another organism has actually made it. Frequently, the marker gene used is one that codes for antibiotic resistance. Antibiotic resistance is a serious health problem, and growing more serious. The World Health Organization warned in September 2001 that humans are building up dangerous levels of resistance to modern antibiotics that could leave them vulnerable to killer diseases. The use of antibiotic resistance marker genes in plants is unnecessary, and leading medical associations have called for a ban on their use, such as the British Medical Association. Despite this, nearly all commercialized genetically plants use antibiotic resistance marker genes.

### **Biotech Boosters: Fool me once, shame on you. Fool me twice...**

The manufacturers of genetically engineered crops and foods are the same companies that have produced products in the past that were marketed as safe but later determined to be profoundly dangerous. For example, Monsanto brought us PCBs, chemicals now linked to cancer and endocrine disruption.

**Solution:** Genetically Engineered Food Alert is a coalition concerned with the protection of consumer rights, public health, and the environment as they relate to genetically engineered foods. In order to protect public health and the environment from the risks of genetically engineered foods, Genetically Engineered Food Alert has launched a nation-wide campaign with the following platform.

### **Genetically engineered food ingredients or crops should not be allowed on the market unless:**

- Independent safety testing demonstrates they have no harmful effects on human health or the environment;
- They are labeled to ensure the consumer's right to know; and
- The biotechnology corporations that manufacture them are held responsible for any harm.

### **Who We Are**

The State Public Interest Research Groups (State PIRGs) are a founding member of the Genetically Engineered Food Alert coalition. GE Food Alert supports a moratorium on the commercialization of genetically engineered crops until the three items above are met, and have been joined in that call by many prominent doctors, academics, scientists, farming organizations, and others. Find more about our work at [www.gefoodalert.org](http://www.gefoodalert.org), or [www.pirg.org/ge](http://www.pirg.org/ge).

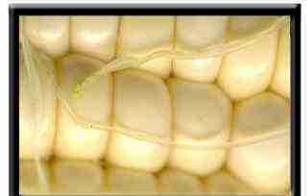


Members of the coalition and prominent signers include the State PIRGs, National Environmental Trust, Friends of the Earth, Center for Food Safety, Organic Consumers Association, Pesticide Action Network North America, Institute for Agriculture and Trade Policy, and over 200 scientists, environmental organizations, farm groups, health professionals, and VIPs such as the Sierra Club, Dr. Barry Commoner, Jim Hightower, Council for Responsible Genetics, the Chefs Collaborative, Paul Hawken, Bonnie Raitt, Dr. Vandana Shiva, and Ralph Nader.

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"If the American public wants progress, they will have to be guinea pigs." – U.S. policy makers at a 1988 meeting on the safety of genetically engineered foods

