

**Excerpt from “Genetically Engineered Food: An Overview”
Food & Water Watch, 2012.**

Uncertain Safety

Despite the FDA’s approval of common GE crops, questions about the safety of eating these crops persist. GE corn and soybeans are the building blocks of the industrialized food supply, from livestock feed to hydrogenated vegetable oils to high-fructose corn syrup. Safety studies on GE foods are limited because biotechnology companies prohibit cultivation for research purposes in their seed licensing agreement.ⁱ

Some of the independent, peer-reviewed research that has been done on biotech crops has revealed some troubling health implications. A 2009 *International Journal of Biological Sciences* study found that rats that consumed GE corn for 90 days developed a deterioration of liver and kidney functioning.ⁱⁱ Another study found irregularities in the livers of rats, suggesting higher metabolic rates resulting from a GE diet.ⁱⁱⁱ And a 2007 study found significant liver and kidney impairment of rats that were fed insect-resistant *Bt* corn, concluding that. “with the present data it cannot be concluded that GE corn MON863 is a safe product.”^{iv} Research on mouse embryos showed that mice that were fed GE soybeans had impaired embryonic development.^v Even GE livestock feed may have some impact on consumers of animal products: Italian researchers found biotech genes in the milk from dairy cows that were fed a GE diet, suggesting the ability of transgenes to survive pasteurization.^{vi}

...The potential long-term risks from eating GE food are unknown. The FDA contends that there is not sufficient scientific evidence demonstrating that ingesting these foods leads to chronic harm.^{vii} But GE varieties became the majority of the U.S. corn crop only in 2005 and the majority of the U.S. soybean crop only in 2000.^{viii} The potential cumulative, long-term risks have not been studied. These considerations should be critical in determining the safety of a product prior to approval, and not left to attempt to assess once the product is on the market.

GE insect-resistant crops may contain potential allergens... Yet there are no definitive methods for assessing the potential allergenicity of bioengineered proteins in humans.^{ix} This gap in regulation has failed to ensure that potential allergenic GE crops are kept out of the food supply.

In 1998, the EPA approved restricted cultivation of Aventis’ insect-resistant StarLink corn, but only for domestic animal feed and industrial purposes because the corn had not been tested for human allergenicity.^x However, in 2000, StarLink traces were found in taco shells in U.S. supermarkets.^{xi}... The StarLink episode is a cautionary tale of the failure of the entire regulatory system to keep unapproved GE crops out of the human food supply.

ⁱ Pollack, Andrew. “Crop Scientists Say Biotechnology Seed Companies Are Thwarting Research.” *New York Times*. February 20, 2009.

ⁱⁱ de Vendomois, Joel Spiroux et al. “A Comparison of the Effects of Three GM Corn Varieties on Mammalian Health.” *International Journal of Biological Sciences*, vol. 5, iss. 7. 2009 at 716-718.

ⁱⁱⁱ Malatesta, Manuela et al. “Ultrastructural Morphometrical and Immunocytochemical Analyses of Hepatocyte Nuclei from Mice Fed on Genetically Modified Soybean.” *Cell Structure and Function*. Volume 27, 2002 at Abstract.

^{iv} Séralini, Gilles-Eric, Dominique Cellier and Joel Spiroux de Vendomois. “New Analysis of a Rat Feeding Study with a Genetically Modified Maize Reveals Signs of Hepatorenal Toxicity.” *Archives of Environmental Contamination and Toxicology*. Vol. 52. 2007 at 596 and 601.

^v Cisterna, B. et al. “Can a genetically-modified organism-containing diet influence embryo development? A preliminary study on pre-implantation mouse embryos.” *European Journal of Histochemistry*. 2008 at 263.

^{vi} Agodi, Antonella et al. “Detection of genetically modified DNA sequences in milk from the Italian market.” *International Journal of Hygiene and Environmental Health*. January 10, 2006 at Abstract.

^{vii} U.S. General Accounting Office (GAO). “Genetically Modified Foods: Experts View Regimen of Safety Tests as Adequate, but FDA’s Evaluation Process Could Be Enhanced.” Report to Congressional Requesters. (GAO-02-566). May 2002 at 30.

^{viii} USDA ERS. “Adoption of Genetically Engineered Crops in the U.S.” Updated July 1, 2011.

^{ix} U.S. Environmental Protection Agency (EPA). Draft White Paper. Concerning dietary exposure to CRY9C protein produced by Starlink corn and the potential risks associated with such exposure. October 16, 2007 at 7.

^x *Ibid.* at 9.

^{xi} *Ibid.* at 10.