



**Competitive Enterprise Institute**

**“Consumer Interest and Concern about  
Genetically Modified Foods:  
Global Perspectives”**

Institute of Food Technologists Annual Meeting

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## “Consumer Interest and Concern about Genetically Modified Foods: Global Perspectives”

Good morning. I'm pleased to be with you today to discuss the topic, “Consumer Interest and Concern about Genetically Modified Foods: Global Perspective.”

I will first provide a context for the discussion that focuses on the broader question – where do people's views, attitudes, perceptions, and concerns come from?

People's attitudes toward items and issues derive from a mix of knowledge and quick appraisals based on their values. That is, people's attitudes equal knowledge plus values.

Companies tend to focus on the knowledge or information component -- "educating consumers" -- and this is often a very useful approach. When the choice is critical, when the costs of informing oneself are low, then there is some prospect that an "information-based" communication strategy can be useful.

However, when the choice is less significant – for example, in a wealthy world of plentiful food with many alternatives -- then consumers will spend less time "informing themselves." In economic parlance, they will be "rationally ignorant." In that case, they are much more likely to be swayed by "emotive/value" concerns.

“Rationally ignorant” is not a pejorative term. For most people, there are few reasons to spend their time learning the nuances of complex policy or scientific issues because they believe they can do very little about them. On the other hand, they do spend time familiarizing themselves with things about which they can do something. People are rational.

Poll after poll suggests that people don't know much about a large number of things outside of their daily lives and interests. Many people don't know who their congressman is, which countries were on which side in WW II, how electricity is generated, and on and on.

There is nothing surprising here -- we all already suffer from information overload about things that are directly relevant to our welfare -- our investment or retirement plans, where our kids should go to college, should we re-finance our mortgage? And many of us -- I suspect - are not as diligent as we might be about these educational tasks. Thus, for most other issues, we spend a few moments and then quickly classify that product or candidate or technology as advancing our values (and thus "good") or threatening our values (and thus "bad").

And, in our modern, wealthy age, many increasingly regard all change as risky.

Moreover, a simple "educational" program or fact-based communication strategies are likely - - not only to fail -- but perhaps to make the situation worse!

First, some data – a Eurobarometer study from the EU noted that the greatest fears of biotech food were in some parts of Europe – in Austria, where the self-described knowledge about this technology was considered to be high, but actual knowledge was low.

For example, 48% of Austrians think the statement is true that “if a person eats a genetically modified fruit, their genes could be modified as a result.” (Compared to an average of 24% in EU countries)

This is not encouraging - it means that a "little bit of knowledge" can be a dangerous thing.

Why? Let us consider why this may be - - and here we go a bit into the literature of what explains what people fear - what explains the attitudes that people hold about things they really haven't thought much about? I've suggested that most people view biotechnology issues quickly - seeing them as advancing or threatening their values. What values?

While there are many ways of classifying them, let's use one classification -- Choice, Safety, Fairness.

Biotech is what it is -- values are what they are -- the challenge is to "frame" genetically modified food in ways that demonstrate its positive values -- in Expanding Choice, in Advancing Food Safety, in Democratizing Nutritional Values

Not easy in a world where choices are already extensive, where food safety is incredibly high, where obesity - not starvation - is the growing problem in the developed world.

Some approaches could relate to groups that are threatened by fears about new technology, such as genetically modified food: People in developing countries, those nutritionally challenged because of vitamin deficiencies or food allergies.

To develop this topic, I'll be focusing on several areas that shed light on consumer perceptions of genetically modified foods:

- Critical events relating to biotechnology from roughly 1980 through 2004
- Findings of major surveys of consumer perceptions of biotechnology
- Factors operating to shape those consumer perspectives

I'll first turn to critical events.

## Critical events\*

The next several slides display a timeline of significant events relating to biotechnology from about 1980 through 2004. A quick survey of those events shows that they fall into several categories – scientific developments, introduction of new products, food crises, and regulatory initiatives.

In the context of consumer perceptions, I'll focus on five critical events that helped shape media coverage, activists' reactions, as well as consumers' attitudes toward genetically modified food:

- “Mad cow disease” crisis in the UK
- Monarch butterfly laboratory study
- Starlink corn intermingling in the U.S.
- “Golden rice” introduction
- Dolly, the cloned sheep

- 1980s – Present: GM crop plants start being developed with useful characteristics such as herbicide tolerance and insect and virus resistance.
- 1982: Insulin produced by GM technology approves for sale by the US Food and Drug Administration.
- 1983: Four separate groups of scientists create GM plants; three groups insert bacterial genes into plants and one inserts a gene into a sunflower plant.
- 1980s – early 1990s: China first to put GM crops on sale, namely a virus-resistant tobacco and a tomato.
- 1990: GM used to make chymosin, an enzyme used in making hard cheese.
- 1993: Monsanto used GM to make bovine somatotropin protein (BST) supplement to increase cows' milk yields.
- 1994: Marking the start of widespread use of genetically modified crop plants in the USA, the FlavrSavr tomato is introduced.
- 1995: Bt corn (corn modified with a bacterium gene to give in insect resistance) goes in the market in the USA.
- 1996: Roundup Ready Soybeans (soybeans resistant to Roundup herbicide) introduced in the USA.
- 1996: UK experience with BSE (Bovine Spongiform Encephalopathy) food crisis – “mad cow disease” linked to human brain disease.
- 1996: GM tomato paste approved in the UK, first GM herbicide tolerant soya beans (Roundup Ready Soybeans) and insect protected maize approved in the EU.
- 1997: Dolly, the clones sheep, born in Scotland in 1996, is revealed to the world.
- 1997: EC Novel Foods Regulation (258/97) comes into effect, requiring a safety assessment for novel and Gm foods before they go on sale.
- 1999: Losey, et al report of laboratory study indicating monarch butterflies could be potentially harmed by GM corn pollen; subsequent field level findings showed minimal, if any, harm.
- 2000: Intermingling of Starlink corn with approved GM varieties; recalls relating to potential for allergic responses.
- 2000: Biosafety Protocol requiring labeling of bio-engineered crops is agreed to by 130 countries in Montreal, Canada.
- 2000: Initial draft of human genome published.
- 2001: EU says labeling will be mandatory
- 2003: African nations affected by drought and famine reject U.S. food aid of GM corn.
- 2003: U.S. sues the EU in the WTO
- 2004: Golden rice: a rice that can make beta-carotene (which our bodies make into vitamin A) is grown in parts of the world where people are deficient in vitamin A. Potatoes that contain extra protein go on sale.
- 2004: EU rules go into effect.

### “Mad cow disease”

Obviously, the first, the mad cow disease crisis, had no clear relationship to biotechnology, but it did relate to food – eating beef from cattle with prions that were linked to human brain disease. If foods people knew about, such as beef, could cause terrible diseases after long incubation periods, what about foods people don’t know about?

In addition, there was considerable loss of faith in government officials for their handling of the crisis in the UK.

### Monarch butterfly

The Monarch butterfly report, that in a laboratory study, GM corn pollen harmed Monarch butterflies, led to numerous media articles that raised the fear that growing biotech crops harms the environment. Environmental groups seized upon this issue and kept it before the public even after reports of field experiments showed little effect.

### Starlink corn

The Starlink episode with the commingling of a corn crop that had not been approved with approved varieties raised fears about allergic reactions as well as created some distrust of producers in managing their crops produced through biotechnology.

### Golden rice

Golden rice – as a food that could save millions from Vitamin A deficiency that causes blindness – is by contrast a very positive event. It demonstrated that producing foods through biotechnology was not just good for farmers, but could produce significant health benefits, especially for the poor in developing countries.

### Dolly the cloned sheep

The cloning of sheep in a research lab in Edinburgh in 1996 brought to the forefront moral and ethical issues about future applications of this technology. Some of those issues were and are present in the debates relating to agricultural biotechnology – “scientists playing God,” in the words of Prince Charles in 2000.

This retrospective of critical events related to the introduction of genetically modified foods is useful in tracing some patterns in changing consumer perceptions that surveys show. There is a close relationship between media coverage, activists’ activities, and consumer perceptions.

### Consumer Surveys

Numerous surveys over the past 10-15 years have focused on consumers’ view of genetically modified foods. I’ll focus on survey’s in the U.S. and the European Union and draw some comparisons and contrasts.

## IFIC's Surveys

Most of you in the audience are probably familiar with IFIC's highly regarded surveys of U.S. consumer attitudes toward food biotechnology. Their first one, completed March 1997, and their most recent one in March 2005 carried many of the same questions, which allows one to track some changes in consumer perceptions over this period.

Currently, according to IFIC's latest survey, consumers do not have food biotechnology high on their radar screens. In fact, the survey shows that only about one-third were aware that foods produced through biotechnology were being sold in stores in the U.S.

Perhaps that reflects the relatively low media and regulatory attention currently given to food biotechnology in contrast to such food issues as obesity and nutritional topics. There has not been a recent biotechnology crisis, such as exists with the War on Obesity.

As the responses to questions 2 and 3 on the IFIC survey indicate, biotechnology ranks low on the areas of consumer concern, both in terms of information on food labels and in terms of food safety.

Only 1% of consumers mentioned they would like to see information about biotechnology on food labels. And in the latest survey, March 2005, less than 1% were concerned about food safety in relation to biotechnology.

2. Can you think of any information that is not currently included on food labels that you would like to see on food labels? And what types of information would that be? (Percentages do not add up to 100% because multiple responses were allowed.)  
(New question Jan. 2001)

	<u>Jan. 2001</u>	<u>Sept. 2001</u>	<u>Aug. 2002</u>	<u>Apr. 2003</u>	<u>Jan. 2004</u>	<u>Mar. 2005</u>
<b>Yes</b>	<b>26%</b>	<b>17%</b>	<b>17%</b>	<b>18%</b>	<b>20%</b>	<b>20%</b>
Nutrition	7%	7%	11%	9%	10%	7%
Ingredients	6%	7%	6%	4%	4%	6%
<b>Biotechnology</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>
Other	11%	7%	7%	9%	8%	10%
<b>No</b>	<b>74%</b>	<b>78%</b>	<b>76%</b>	<b>77%</b>	<b>75%</b>	<b>76%</b>
Don't know/refused	--	5%	7%	5%	5%	4%

3. What, if anything are you concerned about when it comes to food safety? (Percentages do not add up to 100% because multiple responses were allowed.)  
(New question Jan. 2001)

	<u>Jan. 2001</u>	<u>Sept. 2001</u>	<u>Aug. 2002</u>	<u>April 2003</u>	<u>Jan. 2004</u>	<u>Mar. 2005</u>
Food handling/ preparation	23%	38%	42%	41%	29%	42%
Disease/ contamination	16%	32%	41%	28%	22%	28%
Ingredients/ nutrition	8%	16%	17%	17%	9%	23%
Packaging	27%	18%	17%	15%	10%	14%
Chemicals/ pesticides	10%	5%	8%	7%	6%	7%
"Mad cow" disease	--	--	--	--	9%	2%
<b>Biotechnology</b>	<b>2%</b>	<b>2%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>--</b>
Other	19%	12%	7%	9%	7%	17%
Nothing	9%	3%	4%	5%	2%	4%
Don't know/refused	3%	20%	18%	22%	34%	15%

The survey shows that consumers also perceive that food biotechnology will provide benefits, as shown in these responses:

9. a. Do you feel that biotechnology **will provide benefits** for you or your family within the next five years?

	<u>1997</u>	<u>Feb. 1999</u>	<u>Oct. 1999</u>	<u>May 2000</u>	<u>Jan. 2001</u>	<u>Sept. 2001</u>	<u>Aug. 2002</u>	<u>April 2003</u>	<u>Jan. 2004</u>	<u>Mar. 2005</u>
Yes	78%	75%	63%	59%	64%	61%	61%	62%	59%	62%
No	14%	15%	21%	25%	22%	17%	18%	21%	20%	21%
Don't know/refused	8%	10%	16%	16%	14%	21%	21%	17%	21%	17%

- b. If yes, what benefits do you expect? (Percentages do not add up to 100% because multiple responses were allowed.)

(New question Sept. 2001)

	(n=611) <u>Sept. 2001</u>	(n=607) <u>Aug. 2002</u>	(n=617) <u>April 2003</u>	(n=427) <u>Jan. 2004</u>	(n=616) <u>Mar. 2005</u>
Improved quality/taste/variety	33%	41%	43%	37%	32%
Health and nutrition	39%	39%	40%	31%	44%
Reduced chemicals/pesticides	21%	20%	19%	12%	20%
Reduced cost of food	10%	7%	10%	10%	10%
Safety	10%	13%	12%	9%	9%
Improved crops/yield	9%	8%	9%	5%	11%
Other	10%	10%	12%	1%	8%
Don't know/refused	23%	22%	18%	34%	19%

Health and nutrition ranked high in terms of overall benefits, with 44% in 2005 naming those.

It is worth noting that while a majority of consumers felt that biotechnology will provide benefits within the next five years, a smaller percentage of consumers in 2005 (62%) felt this way than in 1997 (78%).

While consumers recognized that there could be benefits from animal biotechnology, they also had very negative feelings about cloned animals, with only 15% having a favorable view, and 74% unfavorable.

21. a. Cloning is a form of animal biotechnology that retains desirable traits by producing animals that are [biologically identical] to the parent. Would you say your overall impression of animal CLONING is...

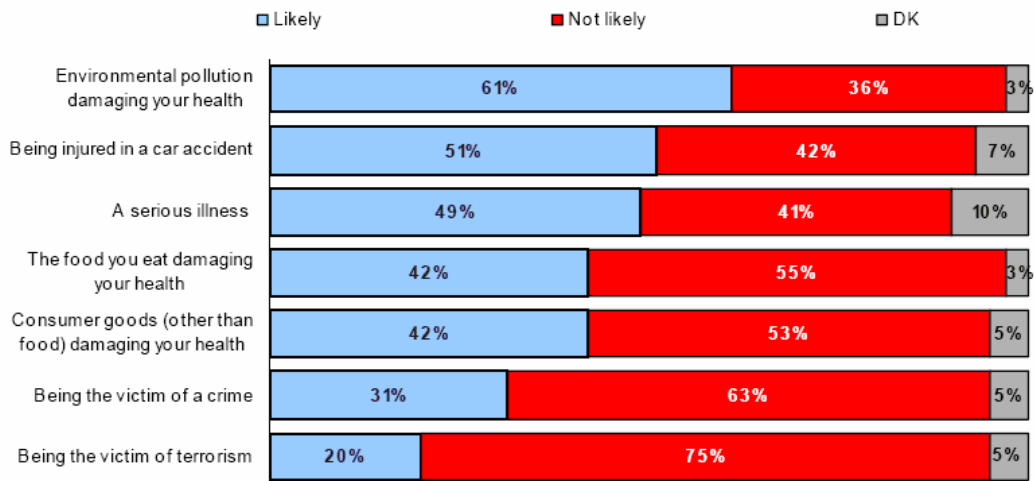
	<u>Jan. 2004</u>	<u>Mar. 2005</u>
<b>Total favorable</b>	<b>18%</b>	<b>15%</b>
Very favorable	4%	4%
Somewhat favorable	14%	11%
<b>Neither</b>	<b>9%</b>	<b>7%</b>
<b>Total unfavorable</b>	<b>71%</b>	<b>74%</b>
Not very favorable	15%	16%
Not at all favorable	56%	58%
Don't know	2%	3%

Moving to a different part of the world, the European Union has an extensive series of consumer surveys, the Eurobarometer surveys, on a wide array of issues, including biotechnology and food. The first such study on biotechnology was in 1991.

While their surveys of EU consumers cannot be directly compared with IFIC's and others' surveys of U.S. consumers, there are nonetheless some apparent differences in consumer attitudes toward food – and toward risk and fear.

In a Eurobarometer special report, “Risk Issues,” just published in February 2006, some striking perceptions of risks are worth noting. A significant proportion of EU consumers – 42 percent – think it likely that the food they eat is damaging their health. The same proportion also believes that consumer goods are likely to damage their health.

Q2 I will read out a list of potential risks. For each of them please tell me how likely you think they are to happen to you personally.  
% EU

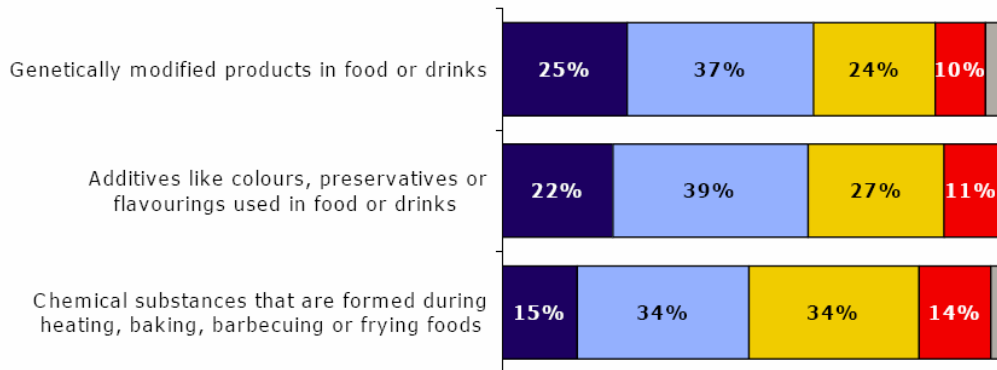


Consumers in the EU also worry a lot about food, particularly about factors that may have been featured in news articles or are products of technology, such as pesticides on food, antibiotics, hormones, food additives.

Q5. For each of the following issues, please tell me if you are very worried, fairly worried, not very worried or not at all worried by it?

%EU

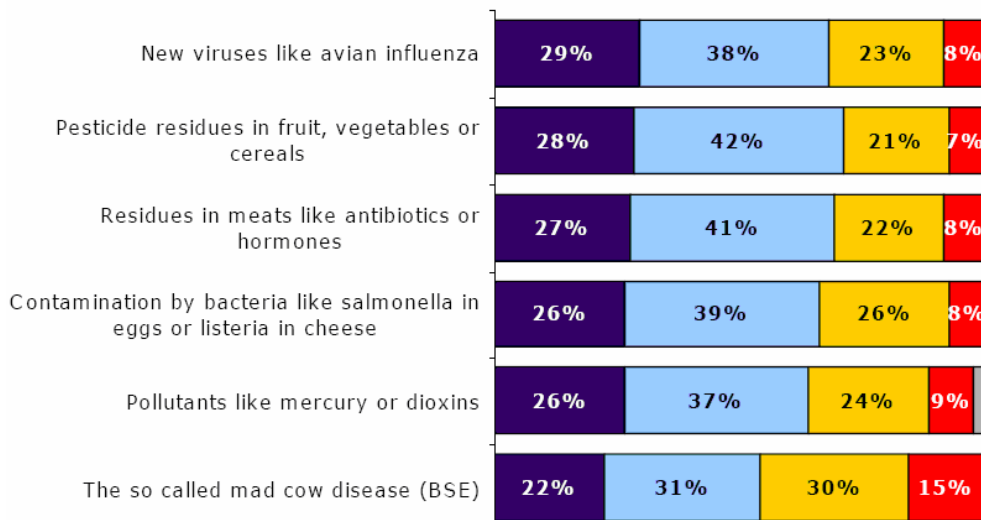
■ Very worried ■ Fairly worried ■ Not very worried ■ Not at all worried ■ DK



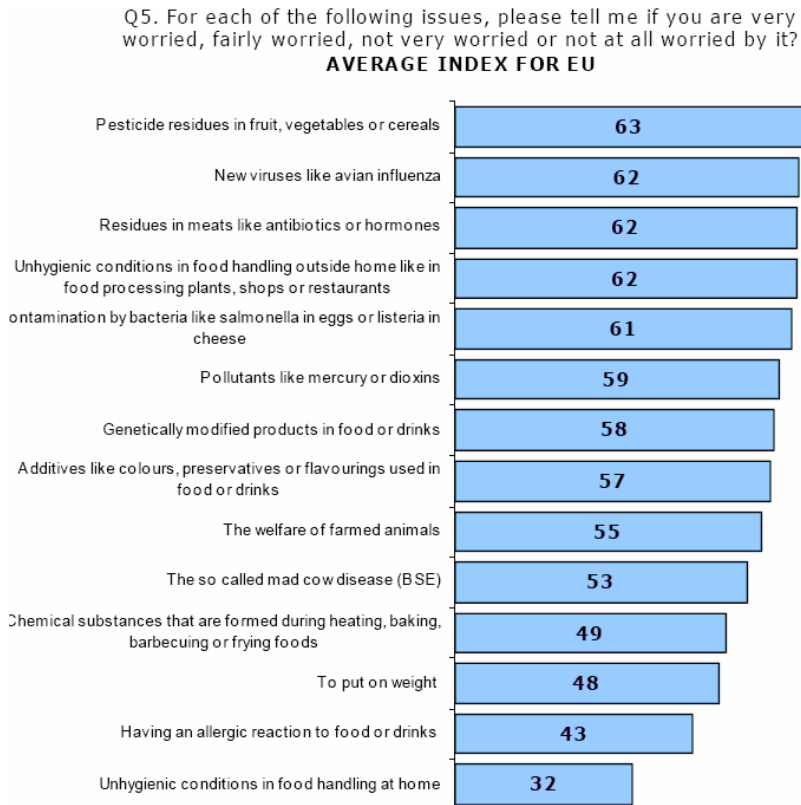
Q5. For each of the following issues, please tell me if you are very worried, fairly worried, not very worried or not at all worried by it?

%EU

■ Very worried ■ Fairly worried ■ Not very worried ■ Not at all worried ■ DK

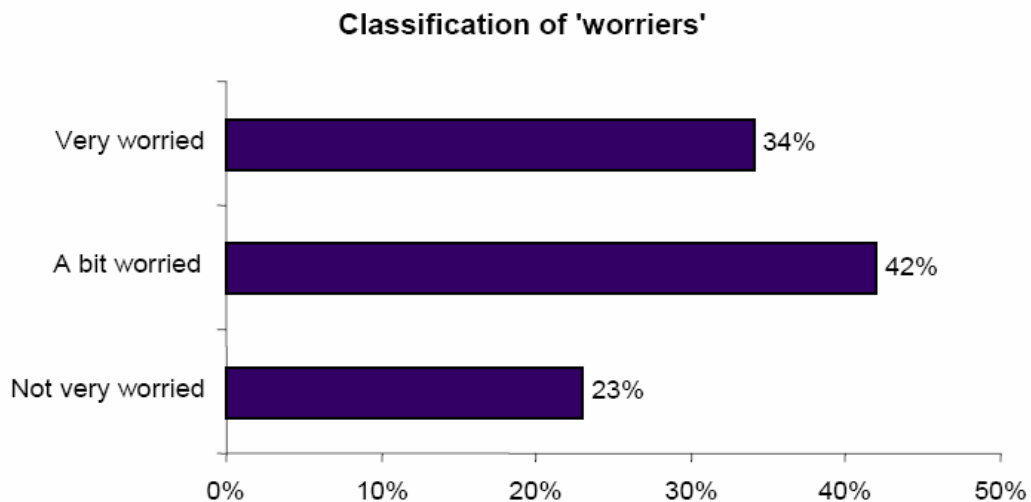


In this graph, the percentages of people worried about food issues are clustered fairly closely between 53% and 63%, with genetically modified products in food or drink – at 58 % -- in the middle of the rankings.



In breakdowns of consumers by country, it is interesting to note that the highest percentage of worriers about genetically modified products in food or drink are Austrians, with almost 7 in 10 Austrians (69%) worried about that.

One-quarter of EU customers are very worried about GM food. In worrying about food in general, 34% of EU consumers are “very worried”. When these data were cross-tabulated with demographics, the survey revealed that gender is an important factor in the extent to which people in the EU are worried about food. About 4 out of 10 women (39%) are “very worried” about food, as compared to 29% of men. And 44% of “house persons” – generally women – are “very worried.” Since women usually make most of the purchase decisions about food in the home, they are a key group to be concerned about.



In terms of major differences between consumers in the EU and the U.S., it is clear that European consumers exhibit a very high level of fear about new technology applied to food. They look at the negative, while U.S. consumers also look at the positive. In the U.S., we also see far less fear of new technology applied to food, less distrust of producers and regulators, and less widespread demonstrations and violence.

Numerous factors can help explain this huge divide. In the EU, cultural factors, agricultural policies, food scares, activists' campaigns, demonstrations, and violence in regard to agricultural biotechnology, the prevalence of tabloid media.

One factor that has an enormous influence is the EU government and its endorsement of the Precautionary Principle in every aspect of public health. I noticed that later this week there will be an extended discussion on the PP, so I will be brief here.

Essentially, the Precautionary Principle suggests that when assessing the risk of a new process, product, or technology, regulators should err on the side of caution until it can be proven safe. The Precautionary Principle assumes that only a prevention strategy is appropriate. Whatever costs might be incurred in delaying or blocking economic and technological change can be ignored. With little theoretical or empirical basis, the PP argues that the risks of innovation will always outweigh the risks of stagnation.

The European Commission formally adopted the Precautionary Principle as a regulation (2002) in regard to protecting public health.

In addition, an EC communiqué notes that:

“Enormous advances in communications technology have fostered this growing sensitivity to the emergence of new risks, before scientific

research has been able to fully illuminate the problems. **Decision-makers have to take account of the fears generated by these perceptions and to put in place preventive measures** to eliminate the risk or at least reduce it to the minimum acceptable level.” (Emphasis added.)

Furthermore, the Precautionary Principle can never be satisfied as long as an inventive alarmist can think of yet one more hypothesis about a possible risk that has not yet been absolutely proven not to exist. And there are some alarming developments recently that point to a further weighting of risk toward the risk of the new. The European Commission has taken the Precautionary Principle further into the realms of hypothetical and further away from reality. The EC’s Scientific Steering Committee adopted a final report that incorporates into “scientific risk assessment” “quality of life” elements, including people’s perceptions about threats from risks even when there is no basis for believing there are any risks.

To quote the report:

“The analysis should not only take in[to] account the usual objective risks but also the fact that **a substantial part of the population is sensitive from a perception point of view to threats even from risks, which have not been shown to exist, but are only assumed or represent hypotheses.**” (Emphasis added.)

That approach could lead to an endorsement of mass hysteria in risk assessment, or prejudices or discrimination against certain groups of people. Fears are common – and can be dangerous. Would the EC have endorsed the fears of those opposed to the smallpox or polio vaccine? In the Dark Ages, would they have backed persecution of witches? All these fears were “real” to many people – and wrong.

Are consumers better off if their fears and misperceptions are taken as fact and steps taken to “protect” them from their self-created concerns? Of course not.

Such an approach, I would offer, helps explain the high level of fear expressed by EU customers about technological advances in food that offer benefits but are likely to be restricted because of perceptions. Yet that’s where the Precautionary Principle will lead us, and it is a scary thought. Indeed, the risks of using the Precautionary Principle suggest that it itself should be rejected. Pandering to fears is not protecting consumers.

In the case of biotechnology, the risks of technology restrictions will be principally borne not by the affluent in the developed world, but by people in developing countries, where the human and environmental benefits of agricultural biotechnology could be dramatic and widespread. Higher crop yields per acre not only can provide larger food output to feed the world’s hungry, but also help preserve forests and habitats. Pesticide reductions made possible by bioengineering resistance into the plants can enhance the environment. The ability to grow crops in arid or saline soils can help keep pace with the needs of growing populations. Enhanced nutritional levels of staple crops, such as rice, can

prevent diseases that are life-threatening or debilitating. Possible reduction of allergens in certain foods can lower health risks to many people.

Undoubtedly, safety issues related to specific crops or foods will be raised, and those risks should be carefully examined. However, those risks must be offset against the very real risks to which many in the world are already exposed.

To return to the theme introduced at the beginning of this talk, consumer knowledge and values shape their perceptions of issues and of products.

In the area of genetically modified food, producers and manufacturers should address those values by emphasizing food biotechnology's benefits in the areas of consumer choice, enhancements of food safety, and fairness in providing people in both the developed world and developing countries with products that can address safety, nutritional and environmental needs.

#### Relating Benefits of Genetically Modified Food to Consumer Values

- Higher crop yields per acre not only can provide larger food output to feed the world's hungry, but also help preserve forests and habitats.
- Crops such as Bt corn reduce the level of mycotoxins and thus increase the safety of the product.
- Pesticide reductions made possible by bioengineering resistance into the plants can enhance the environment.
- The ability to grow crops in inhospitable soils can help keep pace with the needs of growing populations.
- Enhanced nutritional levels of staple crops, such as rice, can prevent diseases that are life-threatening or debilitating.
- Possible reduction of allergens in certain foods can lower health risks to many people.