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## **An Agricultural Law Research Article**

# **Confidence-Building Measures for Genetically Modified Products: Stakeholder Teamwork on Regulatory Proposals**

by

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# CONFIDENCE-BUILDING MEASURES FOR GENETICALLY MODIFIED PRODUCTS: STAKEHOLDER TEAMWORK ON REGULATORY PROPOSALS

Gregory N. Mandel\*

**ABSTRACT:** The introduction of genetically modified products into the human food supply and into other commercial uses is one of the most socially and politically divisive technology issues facing the United States. This article presents a model for confidence building among opposed groups in areas of polarized regulatory conflict generally and details a proposal for confidence building in the genetically modified product arena in particular. The specific proposal entails private industry, activist organizations, and representatives of the public working together on a jointly proposed set of guidelines for improving the quality of genetically modified product regulation.

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Few areas of technology are as socially and politically divisive as the introduction of genetically modified products into the human food supply and into other commercial uses. Proponents of genetically modified products argue that they have boundless human health, ecological, and economic advantages and therefore that they will provide great societal benefits. Opponents contend

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biotechnology poses many, varied, known and unknown risks to humans, animals, and the environment, and therefore that increasing its use invites widespread disaster. This highly polarized debate leaves most members of the public confused as to who or what to believe. As a result, society is severely hampered in its ability to effectively evaluate the potential costs and benefits of genetically modified products and can neither optimally avail itself of biotechnology's potential advantages nor optimally protect against biotechnology's potential risks.

This article presents a proposal for reducing tension and building trust among the various parties debating biotechnology, with the goal of enabling society to maximize social welfare from genetically modified products. This proposal is framed as a "confidence-building measure." Confidence-building measures are a concept developed in international relations; they are relatively quick and inexpensive incremental measures that aim to reduce tension and build trust between parties in a conflict. Confidence-building measures do not seek to solve a conflict immediately, but rather to provide concrete steps that all parties can agree upon, in part to de-escalate tension in a conflict. Through improving communication and uniting the parties in common short-term goals, these measures can create a climate more conducive to negotiation and to reaching consensus on permanent solutions to a conflict.

The confidence-building measure presented involves multiple stakeholder groups working together to jointly develop proposals for improving the regulation of genetically modified products. The goals of this proposal include: (1) reducing the rhetoric surrounding genetically modified products; and (2) improving knowledge, information, and communication about biotechnology among all stakeholders, including the public at large. These improvements, in turn, will lead to greater agreement among the parties regarding how genetically modified products should be handled and regulated in the United States.

Part I of this article identifies the parties involved in the biotechnology conflict and analyzes the nature of the conflict. It concludes with a model for understanding stakeholder conflicts in regulated industries. Part II diagnoses the causes of the biotechnology conflict and studies the mistrust that is prevalent among the parties. Finally, Part III presents a confidence-building measure as a solution to the problems discussed.

## **I. IDENTIFYING THE PARTIES AND THE CONFLICT**

The first step in developing a confidence-building measure for biotechnology is to identify the parties among whom one desires to build confidence. Traditionally, confidence-building measures have been used in two-sided conflicts, such as in attempts to defuse tensions in Northern Ireland or between Israelis and Palestinians. The genetically modified product arena, however, presents not a two-party clash but a multiparty conflict. Thus, it is necessary first to identify the interested parties and modify the traditional confidence-building measure model to reflect this difference.

At least four distinct types of parties are currently at odds over biotechnology: (1) private industry involved in the production and distribution of genetically modified products (for example, Monsanto Company or Aventis S.A.); (2) activist organizations concerned about the current state or regulation of biotechnology (for example, the Alliance for Bio-Integrity or The Foundation on Economic Trends); (3) regulatory agencies responsible for regulating biotechnology (primarily the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA), and the Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture); and (4) the public at large (represented by voters and consumers).<sup>1</sup> Each of these parties mistrusts some, if not all, of the others.

The parties' mistrust of each other's motives, intent, and goals is the central focus of confidence-building measures. In the arena of biotechnology, activist organizations do not trust private industry or regulatory agencies to make proper decisions with regard to genetically modified products. Conversely, private industry does not trust activist organizations and is wary of regulatory agencies and regulatory action. One might contend that industry does not even trust the public at large. For example, private industry strongly opposes the labeling of genetically modified food, in part because it does not trust the public to make the "right" purchasing decisions with this information. This type of mistrust, however, relates to a concern about information-processing abilities and decision making, not to the core issues of mistrust identified above.

The public at large does not trust industry or activists to provide it with an honest evaluation of the benefits and risks of genetically modified products. Additionally, the public is somewhat ambivalent in its trust of regulatory agencies. On one hand, people routinely trust many agency decisions regarding health and safety (for instance, most people will take an FDA-approved drug without a second thought as to its safety).<sup>2</sup> On the other hand, in the arena of biotechnology, there is significant mistrust of regulatory agency action. For instance, a recent survey found that only 30% of the respondents agreed with the statement, "current

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1. The "public at large" (or the "public") clearly is not a discrete group. In this article the term is used as a construct to represent people who (1) do not belong to any of the other three identified groups, and (2) demonstrate opinions and preferences concerning biotechnology through measurable voter or consumer-market trends. In other words, these are people (outside of industry, activists, and regulators) who will influence the development and use of biotechnology through their voting power and consumer activity. Though the public at large is not an organized or cohesive group, its overall position on biotechnology will have a significant (if not decisive) impact on the future of genetically modified products in the United States. See Peter H. Schuck, *The Politics of Regulation*, 90 YALE L.J. 702, 723 (1981) (reviewing THE POLITICS OF REGULATION (James Q. Wilson ed., 1980) (noting that the politics of regulation is most influenced by "the dominant vision of the larger society")).

2. See UNITED STATES FOOD AND DRUG ADMINISTRATION, PUB. NO. FS 01-1, FDA PROTECTS THE PUBLIC HEALTH; RANKS HIGH IN PUBLIC TRUST (2002) (noting the high public approval rating of the FDA), available at <http://www.fda.gov/opacom/factsheets/justthefacts/1fda.html>. On the other hand, public trust of FDA-approved drugs may be due to trust in one's doctor rather than in the FDA drug-approval process.

regulations on GM foods are sufficient to protect people.”<sup>3</sup> This mistrust stems partly from fears of regulatory agency capture by private industry,<sup>4</sup> partly from a perceived lack of agency responsiveness,<sup>5</sup> and for other reasons that are discussed later in this article.

Last are the regulatory agencies, who do not fully trust statements or reports by industry or activists regarding genetically modified products. None of the parties identified above are homogenous in their opinions or mistrust. For instance, some activist organizations are partially trusting of industry or regulators, while others are less so. The diversity of mistrust within the category of regulatory agencies, however, deserves particular attention. Each of the three primary agencies involved in the regulation of genetically modified products (the FDA, EPA, and APHIS) is not fully trusting of the other agencies and is wary of the other agencies’ attempts to capture what may be referred to as regulatory territory.<sup>6</sup> Thus, there may be competition among the agencies themselves over areas of oversight, funding, personnel, and respect or attention. As a result, in the context of biotechnology there is both endogenous mistrust among the regulatory agencies and exogenous mistrust between the agencies and the other stakeholders. The following figure presents a schematic representation of the mistrust present among the various parties in the biotechnology arena.

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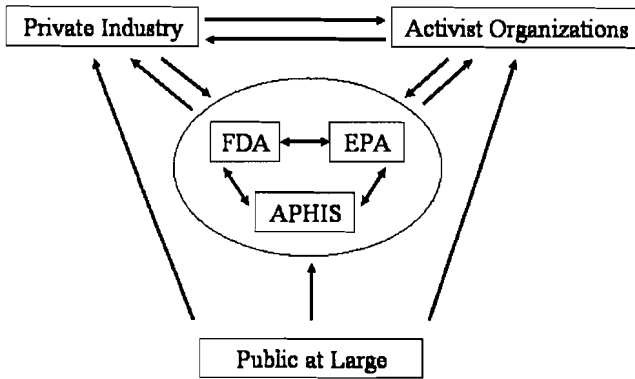
3. Americans & the World, *Labeling GM Foods*, at [http://www.americans-world.org/digest/global\\_issues/biotechnology/biotech3.cfm](http://www.americans-world.org/digest/global_issues/biotechnology/biotech3.cfm) (last visited Oct. 9, 2003). See Thomas O. McGarity, *Seeds of Distrust: Federal Regulation of Genetically Modified Foods*, 35 U. MICH. J.L. REFORM 403, 474–75 (2002) (discussing public mistrust of federal agency regulation of genetically modified products).

4. See, e.g., MARTIN TEITEL & KIMBERLY A. WILSON, *GENETICALLY ENGINEERED FOOD: CHANGING THE NATURE OF NATURE* 68–70 (2001) (“The connections between the U.S. FDA and large agribusiness corporations are disturbing.”); LUKE ANDERSON, *GENETIC ENGINEERING, FOOD, AND OUR ENVIRONMENT* 93–97 (2000) (discussing widespread movement of individuals between private industry and the governmental agencies responsible for regulating genetically modified products).

5. See, e.g., NAT’L RESEARCH COUNCIL, *ENVIRONMENTAL EFFECTS OF TRANSGENIC PLANTS* 173 (2002) [hereinafter NRC 2002 REPORT] (noting the public interest community’s perception of a lack of responsiveness by APHIS to public input and comments).

6. See Caroline Smith DeWaal, *Food Safety Inspections: A Call for Rational Reorganization*, 54 *FOOD & DRUG L.J.* 453, 457 (1999) (discussing resistance from officials at the FDA and USDA to recommendations for improvement in food safety regulation that would require the agencies to cede regulatory authority over certain areas). Instances of the FDA, EPA, and APHIS retaining overlapping areas of oversight, and of conducting overlapping reviews of certain genetically modified products, are evidence of competition over regulatory territory in biotechnology. See Gregory N. Mandel, *Gaps, Inexperience, Inconsistencies, and Overlaps: Crisis in the Regulation of Genetically Modified Plants and Animals*, 45 *WM. & MARY L. REV.* (forthcoming 2004) (discussing areas of regulatory overlap in biotechnology).

**Figure 1. Mistrust Among Parties in Biotechnology**  
(Each arrow designates a direction of mistrust between two parties)



The ultimate objective in the regulation of biotechnology is to enable society to optimally reap biotechnology's benefits while properly guarding against its risks. To achieve this objective it is necessary to reduce the level of mistrust present between the various parties. Absent such a reduction, society will remain mired in its current polarized standoff. Therefore, reducing mistrust is the goal of the confidence-building measure proposed here.

In order to progress beyond the existing standoff, a confidence-building measure for biotechnology does not need to establish trust between every type of party identified above (i.e., it does not have to remove each of the arrows of mistrust identified in Figure 1). This liberty is advantageous, as it is unlikely (certainly in the short term) that Jeremy Rifkin<sup>7</sup> and the CEO of Monsanto will reach a comprehensive agreement regarding how to handle genetically modified products. To succeed, a confidence-building measure instead needs to build appropriate public trust with respect to the other groups (i.e., it must focus on the three arrows of mistrust emanating from the "Public at Large" in the mistrust figure). If deserved public trust can be established it will enable the public at large to more accurately balance the benefits and risks of biotechnology, which in turn will improve determinations regarding whether and under what regulatory system various genetically modified products should be used. The proposal contained in this article focuses initially on confidence building between the public at large and the industry and activist groups. Development of this trust, in turn, will lead to confidence building between the public and the regulatory agencies as well.

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7. The president of the Foundation on Economic Trends, which is generally opposed to genetically modified products. See The Foundation on Economic Trend, About FOET, <http://www.foet.org/AboutFET.htm> (last visited Oct. 9, 2003).

The model presented here can be applied to areas of dispute in regulated industries beyond biotechnology. For example, the types of groups involved, and the conflicts and mistrust among them, are analogous to such divergent issues as debates over nuclear power and securities regulation. In the context of nuclear energy, private industry argues strongly in its favor, activist organizations vehemently oppose it, regulators stake out their own position, and the public at large falls somewhere in the mix with fears about the risks of nuclear power combined with the recognition that it may provide a much needed, low-pollution energy source. Regarding securities regulation, many people in the industry argue for relatively low levels of regulation, contending that a free-market approach will achieve the most efficient result and weed out illicit activity. Consumer advocates, on the other hand, contend more active regulation is necessary because information and transaction costs, among other market failures and inefficiencies, will prevent individual investors from recognizing "bad actors." Securities regulators generally carve out a third position. In both the nuclear energy and securities regulation contexts, private industry, activist organizations, and the regulating agencies all mistrust each other, and the public at large does not generally trust any of the three groups to provide reliable information or to act in the public's actual best interests.<sup>8</sup>

The application of the model presented here to the conflict concerning nuclear power highlights the critical importance in biotechnology of building confidence to reduce tensions and lower mistrust among the parties as soon as possible. The nuclear power debate has dragged on for many decades in the United States, and all parties involved have achieved remarkably little with respect to a satisfactory long-term solution. Even worse than a stalemate is the current situation. The nation's nuclear plants (there are over 100) are now at the end or nearing the end of their originally licensed lives.<sup>9</sup> Despite industry beliefs that better, more efficient, safer plants can now be built and activist concerns that the old plants represent significant safety risks, the parties' inability to work together, combined with the public's confusion and ambivalence on the issue, has led to a trend of renewing existing plant licenses for additional twenty-year terms, with the result that the old nuclear plants will continue to operate for decades beyond their originally licensed lives.<sup>10</sup>

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8. In the securities regulation context, the recent corporate scandals have shifted each of the three parties' positions with respect to the degree and type of regulatory oversight necessary, but there is still a significant difference among their positions and a substantial amount of mistrust.

9. Nicholas S. Reynolds & Robert L. Draper, *The Future of Nuclear Power*, NAT. RESOURCES & ENV'T, Winter 1994, at 9.

10. See, e.g., Nuclear Energy Institute, *Nuclear Power Plant License Renewal*, at <http://www.nei.org/index.asp?catnum=3&catid=286> (April 2003) ("The [Nuclear Regulatory Commission] has renewed the operating licenses of 14 reactors. It is reviewing license renewal applications for some 16 reactors and expects to receive applications for 25 more by 2006. These 55 reactors are more than half the total number operating in the United States. Most of the remaining 48 reactors are expected to receive renewed licenses as well.")

Whether confidence can be built among the stakeholders and the public at large regarding the issues surrounding genetically modified products will determine whether society is able to manage this technology for maximum social welfare, or whether society will be caught in a polarized and endless, nonsocial welfare maximizing conflict, as has happened with nuclear power.

## **II. THE CAUSE AND EFFECT OF PUBLIC MISTRUST**

To build confidence between the public at large and the other stakeholders in the biotechnology debate, it is necessary to diagnose the source of public mistrust. There are two central reasons for public mistrust in the biotechnology context: (1) destabilizing pressures that occur in and as a result of the model presented, and (2) enhanced concern about genetically modified products due to stories about genetically modified products that have appeared in the news. The following sections will analyze the destabilizing pressures first, followed by a discussion of the effects of the stories on public perception.

### **A. Destabilizing Pressures in Biotechnology**

Polarly opposed groups (here, industry and activists, and to some extent regulatory agencies) have a natural tendency to destabilize trust, often unintentionally, throughout a system, and in particular with respect to the public at large.<sup>11</sup> This destabilization occurs because each group holds fast to its position and decries every other position as unreasonable. Each side then identifies and publicizes scientists and other popular figures to trumpet its position and attack that of its opponents. This battle can take place in all variety of media—from radio and television interviews, to postal mailings, to website postings.

The debate about genetically modified products provides numerous examples of this phenomenon. For instance, Keep Nature Natural (an organization that seeks greater regulation and labeling of genetically engineered products) organized winners of the James Beard Foundation's Chef of the Year Award to hold a press conference demanding mandatory labeling and premarket safety and environmental testing of genetically engineered foods.<sup>12</sup> From the other side of the issue, AgBioWorld Foundation (an organization that promotes biotechnology) lined up numerous scientists, including a number of Nobel Prize winners, to sign a "Declaration of Support of Biotechnology" promoting the development and use of genetically modified food.<sup>13</sup> In a similar vein, Prince Charles has been

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11. That destabilization of trust occurs does not imply that initially all parties were entirely trusting of each other. Rather it means that as a result of the process discussed there is even less trust than there would have been absent the destabilization.

12. Press Release, Keep Nature Natural, Top Chefs Add Their Voices to "Keep Nature Natural" (May 10, 2000), available at <http://mindfully.org/GE/Chefs-Join-Effort.htm>.

13. AgBioWorld Foundation, Scientists in Support of Agricultural Biotechnology, at [http://www.agbioworld.org/declaration/declaration\\_index.html](http://www.agbioworld.org/declaration/declaration_index.html) (last visited Oct. 9, 2003). According to its website, AgBioWorld Foundation is a nonprofit organization that does not accept contributions from



outspoken against the introduction of transgenic crops while President Carter has supported genetically modified food.<sup>14</sup> That such strongly differing views on biotechnology are expressed is not surprising; few technological issues have caused as much polarization as how society should handle genetically modified products.<sup>15</sup>

The critical issue for this analysis is where the polarized propaganda storm leaves the public. The public at large is incapable of independently judging the science at issue. A stark example of this inability is demonstrated by a survey study in which over half of the respondents answered (incorrectly) that it was true that "ordinary tomatoes do not contain genes, while genetically modified tomatoes do."<sup>16</sup> Because the public cannot independently judge the science, they cannot determine which position—industry, activist, regulatory, or some alternative—is most reasonable or accurate. Because the public cannot determine which position deserves the most support, people are left to base their decisions on other factors.

Several things happen as a result of this dynamic. First, the public trust in science is eroded. The one consistent argument asserted by every interested party is that other parties' science cannot be trusted. The consequence of this assault on particular scientific theories is a belief that science itself, as a discipline, cannot be trusted.<sup>17</sup> Therefore, no matter how demonstrably someone may be able to prove or disprove that a particular transgenic product is safe, there now will be a tendency on the part of the public to disbelieve the science behind the proof.<sup>18</sup>

Some groups will perceive destabilization itself to be a positive result for strategic reasons and therefore will be content with this status quo. Persons wholly opposed to any genetically modified products, regardless of the manner of regulation, their actual risk profiles, or their potential societal benefits, may rationally calculate that destabilization will lead to public mistrust generally. This general mistrust of all information will tend to retard the adoption of genetically modified products, thus achieving such persons' goal in the first instance. If such

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corporations with direct commercial interests in agricultural biotechnology. *Id.* at <http://www.agbio.world.org/about/about.html>.

14. GERALD C. NELSON ET AL., *THE ECONOMICS AND POLITICS OF GENETICALLY MODIFIED ORGANISMS IN AGRICULTURE: IMPLICATIONS FOR WTO 2000*, at 76 (1999).

15. See Sheldon Krimsky, *Risk Assessment and Regulation of Bioengineered Food Products*, 2 INT'L J. BIOTECH. 231 (2000).

16. NAT'L SCI. BD., NAT'L SCI. FOUND., *SCIENCE AND ENGINEERING INDICATORS—2002*, at ch. 7 (2002), available at <http://www.nsf.gov/sbe/srs/seind02/c7/c7h.htm>. In a later survey, 58% of respondents answered the question correctly. *Id.*

17. See JOSEPH SANDERS, *BENEDICTIN ON TRIAL: A STUDY OF MASS TORT LITIGATION 196–97* (1998) (discussing how conflicting scientific expert testimony in jury trials leads the jury to discount the value of scientific truth).

18. The circumstances discussed in this article, in which people do not rely on science even though science may provide certain relevant and reliable information, may be juxtaposed with other situations in which decision makers use pseudoscientific arguments to support what is actually a nonscientific policy decision. See Gregory N. Mandel, *Toward a Better Decisionmaking Process: Finding the Truth in Policy and Removing False Science*, 15 TEMP. ENVTL. L. & TECH. J. 65 (1996) (discussing the phenomenon of the use of pseudoscience by decision makers to support policy decisions that cannot actually be scientifically supported).

people dominate the “activist organization” category outlined above, there is less hope of success for confidence building among the parties. Most activist organizations, however, do not fit this description and recognize a value to accurate scientific information about genetically modified products—they will support such products to the extent the products can be properly regulated to protect against their potential risks.<sup>19</sup>

The problem of polarized groups destabilizing science can be analogized to the battle of experts that occurs in courtroom litigation. Often the result of fact finders hearing polar, conflicting scientific expert testimony is not that one side’s experts are accepted as accurate and the other side’s experts are perceived to be quacks. Rather, the result usually is that the lay fact finders come to believe that the institution of science itself is not all it is cracked up to be. After all, how can two members of a discipline theoretically based on rigorous methodology and objectivity reach contrary conclusions on the same issue?<sup>20</sup>

Thus, the adversarial process effectively assaults science to such an extent that the decision maker finds it impossible to assess the merits of any scientific position. The decision maker therefore discounts the value of science itself as a means for resolving the conflict at issue and instead turns to other factors to reach its decision.<sup>21</sup>

As a result of the media, advertising, and website wars between private industry and activist organizations regarding genetically modified products, the public, like the fact finder in a trial involving conflicting scientific evidence, does not believe the scientific statements being made by any of the parties. Since the public cannot rely on science, it instead turns to other factors to determine its position on genetically modified products, such as stories about genetically modified products from the media.

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19. See, e.g., Press Release, *supra* note 12 (contending that genetically engineered foods should be “more strictly regulated and labeled,” as opposed to promoting an outright ban); The Center for Food Safety, Public Comment Opportunity on the Labeling & Safety Testing of Genetically Engineered Foods, at [http://www.foodsafetynow.org/send.asp?cam\\_id=58](http://www.foodsafetynow.org/send.asp?cam_id=58) (last visited Oct. 9, 2003) (arguing for mandatory labeling and “a thorough pre-market and environmental testing regime for genetically engineered foods,” as opposed to an outright ban).

20. SANDERS, *supra* note 17, at 196. That two scientists can make polarly opposed statements on a given issue does not demonstrate that one (or both) is being disingenuous or is a poor scientist. Rather this result often can come about due to each scientist’s framing of uncertainty. For an admittedly simplistic example, assume that a given transgenic crop presents a low risk that someone from a population will have an allergic reaction to it, and that this risk level makes the product safer than its conventional counterpart. Under these circumstances all of the following statements are true: (1) “The product is the safest product available,” (2) “The product is not safe,” and (3) “There is uncertainty as to whether or not the product is safe.” Proponents of the technology will focus on the first statement, opponents on the second, others on the third. All are correct, but the public is left understandably confused.

21. *Id.* at 196–97.

## B. Public Reliance on Anecdotal Narrative

That the public should turn to anecdotal information they have received from the media is not surprising. Scholars from a variety of disciplines have determined that the manner in which people construct reality is based strongly on narrative.<sup>22</sup>

This effect has been well documented in the psychological and economic literature. Kahneman and Tversky demonstrated that people employ various cognitive strategies and mental shortcuts to process information.<sup>23</sup> These strategies and shortcuts are known as “heuristics.” One such heuristic is that salient examples carry more weight in decision making than do more abstract, but more accurate, information.<sup>24</sup> Thus, people rely more on events that are vivid and easily available in their minds than on statistically accurate data in determining their position on a given issue.<sup>25</sup>

Similar results have been demonstrated in the legal arena. Numerous studies have found that jurors reach decisions in cases by constructing a single narrative out of the wealth of (often conflicting) evidence they receive.<sup>26</sup> The narrative that the jurors construct influences their interpretation of the facts and determines their verdict.<sup>27</sup>

Consider the trial of O.J. Simpson for the murder of Nicole Simpson and Ron Goldman. Simpson’s inability to fit the glove found at the scene of the crime on his hand provided a vivid, memorable event. That vivid event had a much greater

22. John S. Applegate, *The Prometheus Principle: Using the Precautionary Principle to Harmonize the Regulation of Genetically Modified Organisms*, 9 *IND. J. GLOBAL LEGAL STUD.* 207, 209–10 (2001).

23. See Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 *SCIENCE* 1124 (1974) [hereinafter Tversky & Kahneman 1974]; Daniel Kahneman & Amos Tversky, *On the Psychology of Prediction*, 80 *PSYCHOL. REV.* 237 (1973); Amos Tversky & Daniel Kahneman, *Availability: A Heuristic for Judging Frequency and Probability*, 5 *COGNITIVE PSYCHOL.* 207 (1973).

24. See generally Tversky & Kahneman 1974, *supra* note 23.

25. See SUSAN T. FISKE & SHELLEY E. TAYLOR, *SOCIAL COGNITION* 142–79, 245–94 (2d ed. 1991) (explaining this decision-making heuristic); see generally Tversky & Kahneman 1974, *supra* note 23.

26. See, e.g., Reid Hastie, *The Role of “Stories” in Civil Jury Judgments*, 32 *U. MICH. J.L. REFORM* 227, 229 (1999) (concluding from empirical studies of juror decision making that “the central cognitive process in juror decision-making is story construction”). The powerful importance of narrative in evidence making is well demonstrated by the types of stories which are prohibited from admission as evidence at trial in certain instances out of concern that their impact may be improperly overwhelming (“prejudicial”) to the jury. Examples include victim impact statements and the admissibility of unconstitutionally procured confessions. See, e.g., Paul Gewirtz, *Narrative and Rhetoric in the Law*, in *LAW’S STORIES* 9 (Paul Gewirtz & Peter Brooks eds., 1996) (discussing the exclusion of these types of evidence).

27. See Richard Pozzuto et al., *For Juries, Does Truth Require Facts?*, 25 *AM. J. TRIAL ADVOC.* 135, 137–38 (2001) (discussing the importance of a story to juror interpretation of facts).

impact on the jury than the detailed, complex DNA and other scientific and technical evidence linking Simpson to the crime provided by the prosecution.<sup>28</sup>

In an area closely related to the issues and concerns surrounding genetically modified products, studies about how people conduct personal risk assessments in order to determine what action to take have reached similar conclusions. These studies have found that individuals collapse the potentially overwhelming amount of information they receive on various risks posed by day-to-day activities into a few concrete, specific examples which govern their behavior.<sup>29</sup> The strength of anecdote in dictating public perception is why antinuclear activists are always quick to mention Three Mile Island or proponents of securities regulation reform repeat the name Enron as often as possible.<sup>30</sup> Therefore, to understand the public's perception of biotechnology and its mistrust of the other types of parties involved in the biotechnology debate, it is necessary to examine the narratives on this topic with which the public is familiar.

The anecdotes about genetically modified products that have received the most widespread media attention have been those involving potential problems with biotechnology products. As a result, public concern regarding genetically modified products has been largely influenced by several high-profile disasters. The two most prevalent specific stories in the public mind concerning genetically modified products are the discovery of unapproved StarLink corn in human food and the alleged toxicity of widely planted Bt-corn on monarch butterfly larvae. To understand public opinion concerning genetically modified products, therefore, it is necessary to examine these narratives. Rather than comprehensively describing each of these events, however, for the purposes here it is sufficient to review several specific points about each.

### *1. StarLink Corn*

The StarLink corn debacle occurred because genetically modified corn approved as animal feed (but not for human consumption) was found in the human food supply. StarLink corn had not been approved for human consumption because it carried transgenic genes that expressed a protein that had some characteristics of allergens.<sup>31</sup> As these proteins never had been in the human diet

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28. Jonnie Cochran's memorable argument to the jurors, "If the glove doesn't fit, you must acquit," made the vivid memory of Simpson's attempt to put the glove on even more salient in the jurors' minds.

29. See, e.g., Matthew Rabin, *Psychology and Economics*, 36 J. ECON. LITERATURE 11, 30 (1998) (discussing how individual risk assessments are determined by stories with which people are familiar, as opposed to general or specific statistics).

30. For a more theoretical argument about the dominant force of narrative on people's beliefs and perceptions about the world, consider Robert Cover's *Nomos and Narrative*: "No set of legal institutions or prescriptions exist apart from the narratives that locate it and give it meaning." Robert M. Cover, *Nomos and Narrative*, 97 HARV. L. REV. 4, 4 (1983). "In this normative world, law and narrative are inseparably related. . . . And every narrative is insistent in its demand for its prescriptive point, its moral." *Id.* at 5.

31. In re StarLink Corn Prod. Liab. Litig., 212 F. Supp. 2d 828, 834 (N.D. Ill. 2002).

before, it was unknown whether some people might have severe and potentially life-threatening allergic reactions to them.<sup>32</sup>

The discovery of StarLink corn in human food led to a recall which eventually reached over 300 food products.<sup>33</sup> Numerous mills and plants were shut down as a result of the contamination,<sup>34</sup> and shipments of corn from the United States were turned back from foreign countries, leading to a sharp reduction in corn exports.<sup>35</sup> Several class-action lawsuits were filed as a result of the StarLink incident, ranging from citizens alleging allergic reactions to food products containing the corn, to growers whose corn crop may have been contaminated, to growers who faced a reduction in corn prices due to the contamination concern.<sup>36</sup> Losses associated with the StarLink problem are anticipated to be as high as \$1 billion.<sup>37</sup>

The StarLink contamination occurred because the nation's agricultural system was not equipped to segregate human food crops from animal feed crops. That is, the harvesting, transportation, processing and storage equipment and facilities used were the same for both human and animal products.<sup>38</sup> To cite one telling statistic, the nation's agricultural industry accepts about 2%–7% foreign matter in bulk shipments of corn; the contaminated taco shells contained only about 1%

32. ENVIRONMENTAL PROTECTION AGENCY, WHITE PAPER ON THE POSSIBLE PRESENCE OF CRY9C PROTEIN IN PROCESSED HUMAN FOODS MADE FROM FOOD FRACTIONS PRODUCED THROUGH THE WET MILLING OF CORN 1, available at <http://www.epa.gov/oscpmont/sap/2001/july/wetmilling.pdf> (last modified Jan. 7, 2003). Since Cry9C, the bacterial protein found in StarLink corn, had never been in the human diet before, there was no way to conduct a conclusive allergy test. Andrew Pollack, *Kraft Recalls Taco Shells with Bioengineered Corn*, N.Y. TIMES, Sept. 23, 2000, at C1.

33. Cat Lazaroff, *Transgenic StarLink Corn Called Potential Health Hazard*, ENV'T NEWS SERVICE, Aug. 8, 2001, available at <http://ens-news.com/ens/aug2001/2001-08-08-03.asp>; TEITEL & WILSON, *supra* note 4, at 29, 159.

34. MICHAEL R. TAYLOR & JODY S. TICK, POST-MARKET OVERSIGHT OF BIOTECH FOODS: IS THE SYSTEM PREPARED? 90, 94–96 (2003); Barnaby J. Feder, *Companies Act to Keep Bioengineered Corn Out of Food*, N.Y. TIMES, Sept. 27, 2000, at C2.

35. TAYLOR & TICK, *supra* note 34, at 90; Charles A. Deacon & Emilie K. Paterson, *Emerging Trends in Biotechnology Litigation*, 20 REV. LITIG. 589, 614 (2001); Paul McAuliffe, World Commodity Analysis Corp., *Is StarLink Corn a Problem for U.S. Corn Exports?* (May 9, 2001), <http://www.biotech-info.net/problem.html>.

36. *StarLink Corn*, 212 F. Supp. 2d at 842–43; D.L. Uchtmann, *StarLink TM—A Case Study of Agricultural Biotechnology Regulation*, 7 DRAKE J. AGRIC. L. 159, 196 (2002); Deacon & Paterson, *supra* note 35, at 614–15. Certain of these lawsuits have been settled for in excess of \$100 million. See Allison Beers, *Food, Biotech Firms Settle StarLink Consumer Lawsuit*, FOOD CHEMICAL NEWS, Mar. 11, 2002, at 1 (reporting approval of a \$9 million settlement in a consumer class action lawsuit against certain companies that produced and sold StarLink corn); Stephen Clapp, *StarLink Settlement Approved by Judge*, FOOD CHEMICAL NEWS, Apr. 14, 2003, at 6 (reporting final approval of \$110 million settlement for farmers whose property was contaminated by StarLink corn or who were injured by a reduction in corn prices due to the StarLink corn contamination).

37. James Cox, *StarLink Fiasco Wreaks Havoc in the Heartland*, USA TODAY, Oct. 27, 2000, at B1.

38. *StarLink Corn*, 212 F. Supp. 2d at 834; Uchtmann, *supra* note 36, at 193–95 (discussing the intermingling of StarLink and non-StarLink corn); Anthony George, *OK Sought for Corn in Food*, DES MOINES REG., Oct. 26, 2000, at D1.

StarLink corn.<sup>39</sup> Additionally, farmers were not adequately warned about the need to keep StarLink corn segregated from human food crops.<sup>40</sup> The bottom line was that anyone familiar with the United States' agricultural system would have recognized that contamination was inevitable. According to one farm expert, "Anyone who understands the grain handling system would know that it would be virtually impossible to keep StarLink corn separate from corn that is used to produce human food."<sup>41</sup>

## 2. *Monarch Butterflies*

Concern about injury to monarch butterfly populations from Bt-crops arose when a Cornell University study found that pollen from widely planted genetically modified Bt-corn was toxic to monarch butterfly larvae.<sup>42</sup> A year later, scientists from Iowa State University published a study showing that plants growing in and near Bt-corn fields were "being dusted with enough toxic pollen to kill monarch caterpillars that f[e]d on them."<sup>43</sup> At the time, over one-quarter of the 73 million acres of corn planted in the United States was genetically modified to include the Bt pesticide,<sup>44</sup> and roughly half of the monarchs in the United States passed through the corn belt each year.<sup>45</sup> Unsurprisingly, the combination of these reports and facts caused widespread concern among the public.

Prior to approving the Bt-crop registrations, the EPA had specifically considered the Bt-crops' potential impact on monarch butterflies and had concluded that the transgenic crops posed an extremely low risk based on expectations that (1) monarchs did not occur in cornfields in sufficient numbers to merit investigation, (2) there would be relatively few milkweed plants (the monarch butterfly's chief food source) near or in the transgenic crop fields, and (3) the amount of Bt-pollen that might land on adjacent milkweed plants would be below toxic levels.<sup>46</sup> The EPA, however, had failed to fully consider the impact

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39. Andrew Pollack, *Labeling Genetically Altered Food Is Thorny Issue*, N.Y. TIMES, Sept. 26, 2000, at A1.

40. *StarLink Corn*, 212 F. Supp. 2d at 835; Barnaby J. Feder, *Farmers Cite Scarce Data in Corn Mixing*, N.Y. TIMES, Oct. 17, 2000, at C1.

41. George, *supra* note 38, at D1.

42. John E. Losey et al., *Transgenic Pollen Harms Monarch Larvae*, 399 NATURE 214 (1999).

43. Carol K. Yoon, *New Data in Duel of Biotech Corn vs. Butterflies*, N.Y. TIMES, Aug. 22, 2000, at F2. According to the Iowa State study, twenty percent of the Monarch caterpillars eating the leaves bearing the genetically modified pollen died, compared with a zero fatality rate for caterpillars eating leaves with regular corn pollen. *Id.*

44. Feder, *supra* note 34, at C2; Carol K. Yoon, *Biotech Corn Isn't Serious Threat to Monarchs, Draft U.S. Report Finds*, N.Y. TIMES, Sept. 26, 2000, at F4.

45. Council on Environmental Quality & Office of Science and Technology Policy, Case Study No. II: Bt-Maize 26 (2001), at [http://www.ostp.gov/html/ceq\\_ostp\\_study3.pdf](http://www.ostp.gov/html/ceq_ostp_study3.pdf) (last visited Oct. 8, 2003) [hereinafter Case Study No. II: Bt-Maize].

46. NRC 2002 REPORT, *supra* note 5, at 74; Case Study No. II: Bt-Maize, *supra* note 45, at 25.

of Bt-pollen on monarch larvae, as opposed to the impact on the butterflies themselves.<sup>47</sup>

The result of the Cornell and Iowa studies was that EPA was seen scrambling for data and answers.<sup>48</sup> The EPA concluded that the risk to adult monarch butterflies from Bt-corn was extremely low (as it had originally surmised) and that monarch larvae avoided pollen in detrimental amounts.<sup>49</sup> Similarly, an effort to conduct a formal risk assessment of the impact of Bt-corn on monarch butterfly populations also concluded that the risk from current crops was low or negligible.<sup>50</sup> On the other hand, that risk assessment also found that several of EPA's critical assumptions concerning monarch butterflies were incorrect,<sup>51</sup> and a separate study concluded that the levels of natural deposition of Bt-pollen were sufficient to kill monarch larvae.<sup>52</sup> EPA continues to assess the potential risks to monarchs and the need for possible mitigation.<sup>53</sup>

### III. CONFIDENCE BUILDING THROUGH TEAMWORK ON REGULATORY MEASURES

As a result of the polarized biotechnology debate, the public's trust in the area of biotechnology has been destabilized, both with respect to the other stakeholders and with respect to the science involved. The public now mistrusts information received from private industry, activist organizations, and regulatory agencies, regardless of the actual merit of the information. Due to this destabilization, people have turned to anecdotal narrative to form their opinions and preferences concerning genetically modified products. The most prevalent popular narratives involving genetically modified products—StarLink corn contamination and reports of risks to monarch butterflies—are about problems that have occurred. This sequence of events predictably has led to significant widespread public concern about genetically modified products.

#### A. The Confidence-Building Measure

The public mistrust regarding biotechnology identified in the preceding analysis requires a particular focus with respect to the goal of building confidence.

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47. NRC 2002 REPORT, *supra* note 5, at 74; Case Study No. 11: Bt-Maize, *supra* note 45, at 25–26.

48. See NRC 2002 REPORT, *supra* note 5, at 73–75; Case Study No. 11: Bt-Maize, *supra* note 45, at 25–26.

49. Case Study No. 11: Bt-Maize, *supra* note 45, at 26; NAT'L RESEARCH COUNCIL, GENETICALLY MODIFIED PEST-PROTECTED PLANTS: SCIENCE AND REGULATION 37, 75–77 (2000).

50. Mark K. Sears et al., *Impact of Bt Corn Pollen on Monarch Butterfly Populations: A Risk Assessment*, 98 PROC. NAT'L ACAD. SCI. 11937, 11942 (2001).

51. *Id.* at 11938–39, 11942; NRC 2002 REPORT, *supra* note 5, at 75.

52. NRC 2002 REPORT, *supra* note 5, at 74. The levels of natural deposition were found to be too low to kill adult monarch butterflies at distances greater than five meters from the corn field edge. *Id.*

53. Case Study No. 11: Bt-Maize, *supra* note 45, at 26.

In both the StarLink corn and monarch butterfly scenarios, like other genetically modified product stories that have received widespread media attention, the problems are perceived to have resulted in significant part from regulatory deficiencies. With respect to the StarLink corn fiasco, regulatory agencies were perceived to have lacked rudimentary knowledge of the nation's agricultural product system; with respect to the monarch butterfly concern, regulatory agencies were seen scrambling for data and information that it was perceived they should have acquired prior to approving the Bt-crop registration.

As regulatory deficiencies are a central feature of the narratives surrounding genetically modified products, and as these stories influence public opinion, public concern about biotechnology appears to be caused in significant part by a lack of faith in the regulatory system, as opposed to concern about genetically modified products themselves. This conclusion is supported by survey results. Almost seventy percent of Americans believe that genetically modified food is useful,<sup>54</sup> but only thirty percent believe that it is adequately regulated.<sup>55</sup> This understanding highlights that in the area of biotechnology, the regulatory system must serve at least two purposes. The first is the protection of human health and the environment; the second is ensuring public confidence in the regulatory system itself.

Understanding the role and effects of the public's mistrust in the area of biotechnology leads directly to this article's proposed confidence-building measure: *for private industry, activist organizations, and representatives of the public to work together on a jointly proposed set of guidelines for improving the quality of genetically modified product regulation.*

Under this confidence-building measure the public would be represented by a combination of entities, potentially including existing consumer or voter interest groups, public advocates,<sup>56</sup> independent scientists, and respected states-people.<sup>57</sup> Critical components in selecting public representatives include that they be widely perceived to be trustworthy, that their interests be widely perceived to represent the public at large, that they not have an economic or other individualized interest in the outcome of the proposal process, and that they not already be aligned with private industry, activist organization, or regulatory positions on biotechnology issues.<sup>58</sup>

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54. NAT'L SCI. BD., *supra* note 16, at 19.

55. Americans & the World, *supra* note 3.

56. The concept of a public advocate is for the advocate to construct a view of what the public desires with respect to biotechnology regulation, based in some manner on measurable trends among voters and consumers, and then represent that interest in the discussions about regulatory proposals.

57. The selection of Chief Justice Earl Warren to head the Warren Commission is one example of using a respected states-person to try to instill public confidence in a commission's analysis. The selection of Henry Kissinger and George Mitchell to head the September 11 Commission had a similar goal, though it was compromised when each chose to resign from the Commission.

58. Ensuring genuine public participation is a complex topic in its own right, and one that for the purposes of maintaining a precise focus is not analyzed in detail in this article. There is a wealth of literature on this subject, ranging from more general social and political theories to specific models



This confidence-building measure does not include the regulatory agencies at this stage of the process for several reasons. First, as discussed below, it allows work to proceed more rapidly and cheaply. Second, it reduces the stakes of the outcome, allowing the parties to work together with less reservation. Returning to an earlier example, though one could not expect the CEO of Monsanto and the president of an activist organization to instantly reach agreement on the regulation of all genetically modified products, their organizations could be expected to come together to begin a dialogue regarding what their concerns are and how these concerns can be ameliorated. Third, the exclusion of regulators comports with the confidence-building measure goal of working on a manageable component of the conflict initially. Lastly, as discussed below, building trust among the identified parties first will naturally lead to trust building between these parties and the regulatory agencies as well.

The proposed measure can be a successful confidence-building approach for a number of reasons. First, it meets the core tenets of confidence-building theory outlined earlier: work on the regulatory proposals can begin immediately, would be relatively inexpensive, and involves the stakeholders working together. Working together on proposed guidelines will open lines of communication between the parties and promote shared knowledge and mutual understanding of differing concerns. It will also educate the parties about the benefits and risks of genetically modified products and unite all parties in the common short-term goal of developing a set of regulatory proposals.

This proposal also offers all stakeholders potential benefits, an element necessary to bring the various parties to the same table in the first instance. For activists it would mean working to protect their chief areas of concern: human health and the environment. For industry, regulatory advances could help streamline the regulatory process, reduce the risk of future high-profile problems causing greater public concerns, and increase public trust in the regulatory system. For the public it would mean promoting a greater amount of and more accurate information about biotechnology, improving regulatory function and responsiveness, and allowing society to strike the proper balance between the benefits and risks of genetically modified products.

## **B. Effects of the Confidence-Building Measure**

Implementing a drafting process for regulatory proposals that takes seriously voter and consumer preferences through involvement of public representatives will increase information about, efficiency in, and public confidence regarding

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of public participation, such as citizen police review boards. *See generally*, PUBLIC CHOICE AND PUBLIC LAW: READINGS AND COMMENTARY (Maxwell L. Stearns ed., 1997); WILLIAM N. ESKRIDGE & PHILIP P. FRICKEY, CASES AND MATERIALS ON LEGISLATION: STATUTES AND THE CREATION OF PUBLIC POLICY 43–46 (2d ed. 1995); DANIEL A. FARBER & PHILIP P. FRICKEY, LAW AND PUBLIC CHOICE: A CRITICAL INTRODUCTION (1991); City of Albany Citizens' Police Review Board, at <http://www2.als.edu/glc/cprb/> (last modified July 10, 2003) (citizen police review board website, noting that one goal of the board is to "increase police accountability and credibility with the public").

biotechnology regulation along several vectors. As noted earlier, public confidence in the regulatory system is critical to the success of the biotechnology industry. The EPA recently noted that “consumer acceptance is key to the success of agricultural products, and . . . consumer acceptance is strongly influenced by confidence that regulatory agencies have ensured the public safety.”<sup>59</sup> Similarly, former Agriculture Secretary Dan Glickman has stated, “With all biotechnology has to offer, it is nothing if it’s not accepted. This boils down to a matter of trust . . . particularly trust in the regulatory process that ensures a thorough review—including complete and open public involvement.”<sup>60</sup>

The proposed confidence-building measure will improve the regulatory process by giving the public a more direct role in the process and making the regulatory system more transparent.<sup>61</sup> These results will be achieved because it will be politically infeasible for regulatory agencies not to seriously consider and respond to any guidelines proposed by the joint stakeholder effort described here. Giving the public a direct role also will increase the breadth of information on which regulatory decisions are based, with a concomitant improvement in the quality of the regulation itself.<sup>62</sup>

Greater public involvement will improve public education about genetically modified products. This will allay public concerns about biotechnology to the extent those concerns are unfounded and therefore allow the parties to focus on

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59. Regulations Under the Federal Insecticide, Fungicide, and Rodenticide Act for Plant-Incorporated Protectants (Formerly Plant-Pesticides), 40 C.F.R. §§ 152, 174 (2003).

60. Dan Glickman, Remarks at the National Press Club Newsmaker Luncheon with Agriculture Secretary Dan Glickman (July 13, 1999), available at <http://www.usda.gov/news/releases/1999/07/0285>.

The critical importance of public confidence in the regulatory system may be evidenced by the differing views on transgenic food between citizens of the United States and citizens of European countries. Some have attributed the difference between widespread consumer mistrust of genetically modified products in Europe and partial acceptance in the United States to the confidence that consumers have or lack in their respective regulatory agencies. Krinsky, *supra* note 15, at 236. Europe, for instance, lacks a governmental agency with the regulatory authority and rigor of the FDA. Perhaps as a result, consumers lack confidence in transgenic food in Europe. Royal Society of Canada, *Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada* 211 (2001). Conversely, other commentators have contended that foreign resistance to genetically modified food is a result of economic protectionism, employed because the United States is the dominant genetically modified food producer in the world. See Alejandro E. Segarra & Jean M. Rawson, *CRS Report for Congress, StarLink Corn Controversy: Background* 2 (Jan. 10, 2001), available at <http://www.cnie.org/nle/crsreports/agriculture/ag-101.cfm>.

61. See PEW INITIATIVE ON FOOD AND BIOTECHNOLOGY, *FUTURE FISH: ISSUES IN SCIENCE AND REGULATION OF TRANSGENIC FISH* 50–51 (2003) (discussing the importance of transparency and public participation to instilling trust in the regulatory process), available at <http://pewagbiotech.org/research/fish/fish.pdf> (last visited Oct. 9, 2003); McGarity, *supra* note 3, at 478 (“[T]he most effective way to restore public trust in regulatory agency decision making is to make the regulatory process as transparent as possible and to give representatives of public interest groups a direct role in any decisions to regulate particular GM commodities.”).

62. See NRC 2002 REPORT, *supra* note 5, at 168 (“Opportunities for public involvement can broaden the basis of information on which regulatory decisions are made, improving the quality of decision making.”).

the issues that present true risks. Additionally, providing greater information will result in all parties creating more fully informed narratives about biotechnology, which will lead to greater areas of overlap among the parties regarding how genetically modified products should be regulated.<sup>63</sup>

Involving the public in the determination of the regulatory process will let the public know that the risks of biotechnology are being taken seriously, an element important for public acceptance.<sup>64</sup> The concern that regulators do not take the risks of biotechnology seriously appears widespread.<sup>65</sup> The roots of this concern are unknown, but have been connected by some with historical experiences where chemicals initially promoted as safe were later determined to require regulation or a ban.<sup>66</sup> This basis again demonstrates the strength of narrative in constructing public opinion—stories concerning past problems with chemical regulation still play strongly in the public's mind. Improvement of the regulatory process for genetically modified products will help allay these types of concerns.

Public participation in regulatory guideline proposals also furthers democratic goals. Biotechnological regulation necessarily requires risk management decisions, and such decisions depend on interpretive judgments and assumptions. Democracy is best served in risk management decision making by providing for serious, considered representation of those affected by the regulation.<sup>67</sup> This representation is particularly appropriate when assessing environmental impacts because the severity of such impacts is necessarily based on value judgments. Relatedly, people are significantly more willing to accept voluntary risks than involuntary ones.<sup>68</sup> The more the public is involved in the risk management decision-making process, the more the risks will be viewed as voluntary. Perhaps partly because of these beliefs, research on "environmental risk indicates that public confidence in environmental policy making is particularly sensitive to the opportunity for concerned citizens to be involved in the decision-making process."<sup>69</sup> Greater public involvement in regulating genetically modified products is thus critical to establishing trust in this area.

Public involvement in the regulatory process is an especially delicate issue in the context of genetically modified products. Because the United States'

63. Survey data indicate that as people learn more about genetically modified products, they tend to perceive fewer risks from the products. CAROL SILVA ET AL., "BENEFITS FROM BIOTECHNOLOGY" OR "RISKS FROM GENETIC MANIPULATION"; FRAMING EFFECTS, MENTAL IMAGES AND PREFERENCES FOR GENETICALLY MODIFIED FOODS 15 (2002).

64. NRC 2002 REPORT, *supra* note 5, at 242–43.

65. *Id.* at 173 (discussing a decline in public comment on Federal Register notices due to a concern that APHIS was not taking public concerns seriously).

66. *Id.* at 242.

67. *Id.* at 53 ("Democracy is best served when those affected by regulatory decision making [are] as fully involved in making [risk] judgments and assumptions as is practically possible.").

68. See generally Peter Huber, *Safety and the Second Best: The Hazards of Public Risk Management in the Courts*, 85 COLUM. L. REV. 277 (1985) (noting general public willingness to accept voluntary risks and distaste for involuntary ones).

69. NRC 2002 REPORT, *supra* note 5, at 168.

Coordinated Framework for the Regulation of Biotechnology<sup>70</sup> was created in reliance on statutes enacted decades prior to the advent of transgenic products, no public debate or congressional testimony specifically relating to biotechnology issues occurred when the laws now governing genetically modified products were enacted.<sup>71</sup> This failure of public involvement has been exacerbated since the creation of the Coordinated Framework. The FDA, EPA, and APHIS all have been criticized for failing to involve the public adequately in their decision-making processes and for limiting public access to information.<sup>72</sup> To cite one example, public input on APHIS Federal Register notices regarding petitions for transgenic products fell dramatically from the early 1990s to the late 1990s.<sup>73</sup> At least part of this decline was due to a perceived lack of responsiveness from APHIS to comments provided by the public interest community, leading people to believe that writing public comments was a “waste of time.”<sup>74</sup> For these reasons, it is incumbent upon regulators to make an extra effort to promote public involvement and input in biotechnology regulation. In sum, involving the public in proposing regulatory change will improve the regulatory process by further legitimizing it and create public confidence that human health and the environment are being adequately protected.

The advantages highlighted in the preceding discussion distinguish this proposed confidence-building measure from other recent high-profile attempts to bring stakeholders together that have met with widespread criticism. Both President Clinton’s establishment of the President’s Task Force on Health Care Reform in the early 1990s and President Bush’s creation of an Energy Task Force in 2001 were promoted by their respective administrations as efforts to bring stakeholders together with the goals of building confidence and agreement among various parties and developing statutory or regulatory proposals. Each attempt

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70. Coordinated Framework for Regulation of Biotechnology, 51 Fed. Reg. 23,302 (June 26, 1986).

71. The FDA regulates genetically modified products primarily pursuant to the Federal Food, Drug, and Cosmetic Act (FFDCA), 21 U.S.C. §§ 371–379d, enacted in 1938. The EPA regulates genetically modified products pursuant to the FFDCA; the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § 136a, enacted in 1947; and the Toxic Substances Control Act, 15 U.S.C. §§ 2601–2692, enacted in 1976. APHIS’ regulatory authority, the Plant Protection Act (PPA), 7 U.S.C. §§ 7701–7772, enacted in June of 2000, appears at first glance to represent an exception. However, the PPA essentially consolidated several existing statutes, primarily the Federal Plant Pest Act (FPPA), 7 U.S.C. §§ 150aa–150jj, enacted in 1957 (repealed in 2000 with the enactment of the PPA), and the Federal Plant Quarantine Act (FPQA), 7 U.S.C. §§ 151–167, enacted in 1912 (repealed in 2000 with the enactment of the PPA). The PPA regulations pursuant to which APHIS currently regulates genetically modified products are the same as those in place prior to the enactment of the PPA. See 7 C.F.R. §§ 340.0–340.9 (2002).

72. See McGarity, *supra* note 3, at 478 (critiquing the regulatory process for transgenic product approval at the FDA and EPA for lacking transparency, public involvement, and public access to information); NRC 2002 REPORT, *supra* note 5, at 172–77 (critiquing APHIS’ transgenic plant regulatory process for not adequately engaging public involvement and allowing overbroad protection of information as confidential).

73. NRC 2002 REPORT, *supra* note 5, at 173.

74. *Id.*

was met with strong opposition and severe criticism. This opposition, however, can be traced to flaws inherent in the initial stakeholder processes. With respect to the Clinton Task Force, the development process was criticized as “secretive planning [by a] hand-picked task force.”<sup>75</sup> In particular, the healthcare insurance industry felt inadequately involved in the development of the proposal, leading to a barrage of advertising and campaigning against the plan.<sup>76</sup> Similarly, the process followed by the Bush Energy Task Force was heavily criticized as too secretive and too reliant on certain special interests to the exclusion of others.<sup>77</sup> These experiences demonstrate the necessity that a confidence-building measure be a true joint stakeholder effort, that it not be wedded to (or perceived to be wedded to) certain outcomes from its inception, and that it proceed in an open and transparent manner. The proposal discussed herein contains each of these elements.

There are additional, second-order benefits that will flow from the proposed confidence-building measure. The advantages mentioned so far (such as greater communication and the stakeholders working together) will, in turn, help to reduce tension and build trust among the various parties. Greater public education and involvement will help to restabilize and rehabilitate the destabilized view of science. In addition, the measures discussed herein will result in a greater amount of and better information about biotechnology being made available to the public.

Restabilizing science and improving information will shift the stories on which people rely to construct their opinion of biotechnology from semi-random anecdotes to more fully and better informed narratives. As a result of this shift, as well as information proliferation and multiple stakeholder involvement, the area of agreement among the parties about how to handle biotechnology will grow, leading to greater agreement about how to balance the benefits and risks of biotechnology and to greater accord regarding how genetically modified products

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75. Mike Tanner, *The Conservative Resource*, Three-Year Anniversary of Clinton's Liberal Health Care Plan: Bigger Government, Higher Taxes, at <http://www.geocities.com/CapitolHill/1378/health.htm> (last visited Oct. 12, 2002).

76. See, e.g., PBS Online Newshour, Events following Clinton's Healthcare Address to Congress through March 1994 (providing an outline of the healthcare insurance industry's response to the Clinton Task Force's proposal), at [http://www.pbs.org/newshour/forum/may96/background/health\\_debate\\_page2.html](http://www.pbs.org/newshour/forum/may96/background/health_debate_page2.html) (last visited Oct. 21, 2003).

77. See Press Release, National Resource Defense Council, Data Shows Industry Had Extensive Access to Cheney's Energy Task Force (May 21, 2002) (contending that “documents provided by the Energy Department confirm[] that energy industry lobbyists enjoyed extraordinary access to . . . [the] energy task force”), available at <http://www.nrdc.org/media/pressreleases/020521.asp>; Press Release, National Resource Defense Council, Energy Department Documents Verify Industry Influence over Bush Policies (May 21, 2002) (contending that coal and other energy industry interests had an inordinate level of input), available at <http://www.nrdc.org/media/pressreleases/020521b.asp>; Reuters, Bush Energy Task Force Consulted Environmentalists (Apr. 12, 2002) (reporting that environmentalists were given only two days to provide input to the Bush Energy Task Force and then “that only ideas that fit in with the administration's existing attitudes [w]ould be forwarded up the chain of command,” whereas energy industry executives were given months for input and had many meetings with the Task Force), available at <http://www.evworld.com/databases/shownews.cfm?pageid=news110402-07>.

should be regulated.<sup>78</sup> Thus, the short-term goal of developing joint regulatory proposals potentially lends itself directly to longer-term and more comprehensive solutions involving greater stakeholder agreement, actual regulatory change and improvement, and trust building between the various parties and the regulatory agencies themselves.



The debate concerning genetically modified products is stuck in a quagmire of combative science and information that, unsurprisingly, has led the public at large to mistrust private industry, activist organizations, and the regulatory agencies involved. This mistrust, and the consequential destabilization of science, has resulted in enhanced public concern about biotechnology due to a dominant reliance on media anecdote as opposed to reliance on a complete set of information.

The confidence-building measure proposed herein provides a first, significant step beyond this entrenched situation by offering a solution to both of these problems. First, the confidence-building measure seeks to heal the mistrust among the various parties by affording a means for serious, considered public participation in the regulatory development process. This participation will reduce tension and establish trust among all the parties to the conflict, in part by fostering greater communication among the parties and rehabilitating the public's reliance on science. Second, the restabilized view of science and increased flow of information will lead to a better understanding of the actual benefits and risks of biotechnology, as opposed to reliance on semi-random anecdote. These advances not only will improve relations among the parties, but also will increase the area of agreement among the parties regarding how to regulate biotechnology. As a result, this confidence-building measure will create a climate more conducive to further negotiation and to all parties reaching consensus on permanent solutions in the biotechnology debate.

Finally, just as the concept of confidence-building measures has implications beyond its foundation in international conflict, the model presented here has applications for building confidence in the context of other debates in other regulated industries.

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78. One potentially analogous example may be the report prepared by the panel of experts convened with respect to the silicone breast implant multidistrict litigation. The result of the panel's analysis was to create significant consensus and to substantially end the powerful disputes that were raging with regard to the safety, or lack thereof, of silicone breast implants. See BETTY A. DIAMOND ET AL., RULE 706 NATIONAL SCIENCE PANEL REPORT (Nov. 30, 1998) (report of the National Science Panel convened by Judge Pointer in the silicone breast implant multidistrict litigation, concluding that there was no consistent evidence of the implants causing connective tissue diseases or immunologic dysfunction), available at <http://www.fjc.gov/BREIMLIT/SCIENCE/report.htm>.