ARTICLE

YOU CALL *THAT* ORGANIC?—THE USDA'S MISLEADING FOOD REGULATIONS

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The Organic Foods Production Act of 1990 and the United States Department of Agriculture (USDA) regulations promulgated pursuant to it create a regulatory definition of the term "organic." They establish detailed process-based requirements for the production and handling of organic foods, and they make it illegal to label food organic, or even to imply that food is organic, unless the food was produced and handled in conformance with those requirements. This regulatory definition, however, was created after consumers had already developed an impression about what organic means. In particular, people had come to believe that organic products were "all-natural"—free of pesticides and, more recently, free of the products of genetic engineering. This Article discusses the differences between the regulatory definition and the public impression of organic food and argues that these differences likely not only lead to consumer misunderstandings in a manner in tension with federal false advertising principles, but also likely distort political debates on policies regarding biotechnology and pesticides. It explains that consumers who think, falsely, that organic food offers a safe haven from pesticides and genetically engineered foods will be less likely to protest regulatory policies regarding pesticides and biotechnology. It argues that the regulations also give organic farmers, who benefit from consumers' beliefs that organic food is purer than it is, an incentive to refrain from publicly complaining about the regulations or about agricultural practices that contaminate organic food. This Article further explains how USDA and Food and Drug Administration (FDA) policies create obstacles to the creation of alternative food labeling standards that would better comply with consumer expectations, and how the approach taken by the organic regulations may make conventional farmers less careful about the ways in which they use genetically engineered crops and pesticides.

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I. INTRODUCTION

Organic food's popularity is booming. Throughout the 1990s, sales of organics in the United States grew by 20% each year, and certified organic cropland more than doubled.[1] In addition to 20,000 natural foods stores, 73% of conventional grocery stores across the country now carry organic products.[2] Consumer surveys indicate that by 2001, 67% of American shoppers were

[1] Lauren Zeichner, *Product vs. Process: Two Labeling Regimes for Genetically Engineered Foods and How They Relate to Consumer Preference*, 27 ENVIRONS ENVTL. L. & POL'Y J. 467, 471 (2004).

[2] CAROLYN DIMITRI & CATHERINE GREENE, U.S. DEP'T OF AGRIC., RECENT GROWTH PATTERNS IN THE US ORGANIC FOODS MARKET 1, *available at* http://www.ers.usda.gov/publications/aib777/aib777b.pdf (last visited Feb. 21, 2005).

using organic products.[3] And, contrary to many stereotypes, these organic consumers are not confined to the upper or middle classes. A study conducted by Hartman Group in 1999, for example, found that 31% of "heavy" organic buyers, defined as consumers who bought at least 28 organic items a week, had less than $15,000 in annual household income, and that 52% of heavy organic buyers made less than $30,000 per year.[4]

The organic food industry in the United States can trace its roots back to at least 1942, when Jerome Rodale, a farmer in Pennsylvania, founded the magazine *Organic Farming and Gardening*.[5] In it, he promoted the idea that healthy crops could be grown without the inventions of modern science.[6] Rodale incorporated the views of Sir Albert Howard and Ehrenfried Pfeiffer, both of whom advocated the use of compost rather than pesticides or chemical fertilizers, arguing that composting would make the soil more fertile and would result in crops that were healthier to eat.[7] Although initially Rodale suffered ridicule for his ideas,[8] interest in avoiding pesticides grew after Rachel Carson published *Silent Spring* in 1962.[9] By the early 1970s, farmers were marketing food as organic.[10] Some farmers, however,

[3] HEALTHFOCUS, 2001 HEALTHFOCUS FAST FACT REPORT: WHAT DO CONSUMERS WANT FROM ORGANICS? 6 (2001). This number was up from 55% in 1998. *See id.*

[4] Jack Whelan, *Wellness Myth #2:Tthe Organic Consumer isLimited to a Specific Well-Defined Demographic*, 4 NAT. SENSIBILITY (Hartman Group, Bellevue, Wash), July 16, 2002, *at* http://www.hartman-group.com/products/natsens/issueIV-10.html (last visited Feb. 21, 2005).

[5] *See* PHILIP CONFORD, THE ORIGINS OF THE ORGANIC MOVEMENT 100 (2001).

[6] *See generally id.* at 54, 100.

[7] *See generally id.* at 53–59, 73–76, 100. Rodale first learned about organic farming by reading an article by Sir Albert Howard in an English health magazine. *See id.* at 100. Howard, who became the associate editor of Rodale's Organic Farming and Gardening magazine, had been promoting what came to be known as organic farming methods in England since at least 1931. *See id.* at 56–57, 100.

[8] *See id.* at 102.

[9] *See* Zeichner, *supra* note 1, at 469; Anita Manning, *USDA gives bite to organic label*, USA TODAY, Oct. 16, 2002, at D5 (discussing how interest in organic food grew after the publication of Rachel Carson's SILENT SPRING); Scott McCredie, *Organic Produce Gains Popularity, But Some Wonder if It's a Healthier Choice*, SEATTLE TIMES, July 31, 2002, at C1 (explaining that Rodale's ideas did not gain significant ground until the publication of SILENT SPRING).

[10] Kyle W. Lathrop, *Pre-empting Apples with Oranges: Federal Regulation of Organic Food Labeling*, 16 J. CORP. L. 885, 886 (1991).

apparently tried improperly to obtain the price premium consumers were willing to pay for organic food by labeling conventional[11] food as organic. In response to allegations of such fraudulent activity, Oregon passed the first organic certification law in 1973.[12] By 1990, 21 other states had passed laws regulating organic food labeling.[13] Yet each of these laws was slightly different, creating conflicting regulatory requirements for organic food labeling across the country.[14]

Congress stepped in to unify the standards in 1990, passing the Organic Foods Production Act.[15] The Act's stated goals were to establish national standards governing organic marketing, to assure consumers that organically produced products meet a consistent standard, and to facilitate interstate commerce in organically produced fresh and processed food.[16] The Act required the Secretary of Agriculture to promulgate regulations creating an organic certification program that would achieve these goals.[17]

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[11] Throughout this Article, "conventional" is used to mean non-organic.

[12] Lathrop, *supra* note 10, at 891.

[13] *See* S. REP. NO. 101-357, at 289 (1990), *reprinted in* 1990 U.S.C.C.A.N. 4656, 4943.

[14] For example, California's law provided that, "in the case of perennial crops, no synthetically compounded fertilizers, pesticides, or growth regulators shall be applied by the grower to the field or area in which the commodity is grown for 12 months prior to the appearance of flower buds," CAL. HEALTH & SAFETY CODE § 26569.11(a)(2) (West 1982) (repealed 1990), whereas Montana required that perennial crops be grown in fields where "no synthetically compounded substances were applied for 24 months before the appearance of flower buds," MONT. CODE ANN. § 50-31-222(5) (1989) (repealed 1999), and North Dakota required that organic food be grown in soil "free of synthetic fertilizers, pesticides, hormones, antibiotics, growth stimulants, and arsenicals for a minimum of three years prior to the harvest of the organic food." N.D. CENT. CODE 4-38-03(2) (1987) (repealed 2003). Virginia required organic foods to be labeled as grown, processed, or produced "IN ACCORDANCE WITH § 3.1-385.2 OF THE CODE OF VIRGINIA," VA. CODE ANN. § 3.1-385.3 (Michie 1990) (repealed 2003), but California required organic food to be labeled as grown, processed, or produced "IN ACCORDANCE WITH SECTION 26569.11 OF THE CALIFORNIA HEALTH AND SAFETY CODE." CAL. HEALTH & SAFETY CODE § 26569.13 (West 1982). Oregon did not require any statutory references to be on food labels but limited the type size of the word "organic" to "three-fourths of the type size of the product identity." OR. REV. STAT. § 616.416(7) (1989) (repealed 2001). For further discussion of the state organic laws that existed in 1990, *see infra* notes 83–86 and accompanying text.

[15] Organic Foods Production Act of 1990, Pub. L. No. 101-624, 104 Stat. 3935 (1990) (codified at 7 U.S.C. §§ 6501–6522 (2000)).

[16] *Id.* § 6501.

[17] *Id.* § 6503(a).

The Act set out general requirements for these regulations, including that the Secretary establish a "National List" of approved and prohibited substances for use in organic production and handling,[18] that the regulations prohibit the use of synthetic fertilizers in crop production and the administration to livestock of growth promoters such as hormones or antibiotics,[19] and that the rules for organic handling operations prohibit the addition of synthetic ingredients during processing.[20] The Act further provided that the organic food standards established by the regulations would be enforced by agents who would certify that organic farmers and handling operations were properly complying with the standards.

It took over a decade for the United States Department of Agriculture (USDA) to promulgate final regulations implementing the Organic Foods Production Act. Proposed rules were first issued in 1997.[21] These sparked more public comments than any other USDA regulation in history.[22] Most commenters complained that the proposal permitted too many conventional farming techniques. Of greatest concern to the commenters was the lack of any rules prohibiting the use of genetic engineering, the application of sewage sludge to crops as fertilizer, or the use of irradiation in organic production or processing.[23] According to the USDA, the "275,603 commenters on the first proposal nearly universally opposed" the use of genetic engineering, irradiation, and sewage sludge in organic production systems.[24] In response to

[18] *Id.* § 6517(a).

[19] *Id.* § 6508(b)(1), § 6509(c)(3).

[20] *Id.* § 6510.

[21] *See* National Organic Program, 62 Fed. Reg. 65,850 (proposed Dec. 16, 1997).

[22] *See* National Organic Program 65 Fed. Reg. 13,512, 13,512 (proposed Mar. 13, 2000) ("On December 16, 1997, the first proposed rule was published in the Federal Register, and 275,603 people wrote to us to explain why and how the rule should be rewritten, the largest public response to a proposed rule in USDA history.").

[23] *See* National Organic Program, 62 Fed. Reg. 65,850 (proposed Dec. 16, 1997). The proposed rules expressly requested public comments on whether the use of genetic engineering and sewage sludge should be allowed. *See id.* at 65,875, 65,893. They also included chymosin, "an enzyme . . . being produced through genetically engineered microorganism in quantities suitable for cheese production" on the proposed National List of substances approved for use in organic production. *Id*. at 65,895.

[24] National Organic Program, 65 Fed. Reg. 13,512, 13,512–14 (proposed Mar. 13, 2000).

these and other comments, the USDA issued new proposed rules on March 13, 2000, which prohibited organic producers and processors from intentionally making use of genetic engineering, irradiation, or sewage sludge.[25] After another public comment period, these proposed rules were slightly revised and final rules were issued December 21, 2000.[26] The rules fully took effect on October 21, 2002.[27]

The National Organic Program (NOP) regulations operate by controlling the use of the word "organic" in food labeling and marketing.[28] Those who wish to label or market their products as organic may only do so if they comply with the regulations' detailed requirements. For example, organic producers must implement a crop rotation routine to provide for erosion control[29] and must not use burning as a means of disposing of crop residues.[30]

The USDA designed these regulations to be process-based, not product-based.[31] This means that the regulations focus on the processes of growing, harvesting, raising, and preparing organic foods,[32] such as how crop pests are managed, how soil fertility is maintained, and how livestock are cared for. In contrast, product-based regulations focus on observable or testable characteristics of the final product itself, such as whether the product contains

[25] *Id.*

[26] National Organic Program, 65 Fed. Reg. 80,547, 80,548 (Dec. 21, 2000) (codified at 7 C.F.R. § 205). There were 40,774 public comments during this second comment period. *Id.*

[27] *See* Press Release, U.S. Dep't of Agric., Veneman Marks Implementation of USDA National Organic Standards (Oct. 21, 2002), *available at* http://permanent.access.gpo.gov/websites/www.fas.usda.gov/agx/organics/press.htm.

[28] The regulations allow three types of labels—"100 percent organic," "organic," and "made with organic [specified ingredients or food group(s)]"—and define requirements for the use of each. *See* National Organic Program Rule, 7 C.F.R. §§ 205.300–205.309 (2003).

[29] *Id.* § 205.205.

[30] *Id.* § 205.203(e)(3).

[31] National Organic Program, 65 Fed. Reg., 80,547, 80,549 (Dec. 21, 2000) (codified at 7 C.F.R. § 205) ("The emphasis and basis of these standards is on process, not product.").

[32] *See* Steve Charnovitz, *Green Roots, Bad Pruning: GATT Rules and Their Application to Environmental Trade Measures*, 7 TUL. ENVTL. L.J. 299, 303–13 (1994) (providing general definitions of product standards and process standards).

pesticide or other chemical residues.[33]

The distinction between process-based and product-based regulations, often called the "process-product distinction," has been a focal point in environmental policy debates.[34] The distinction was the basis for a General Agreement on Tariffs and Trade (GATT) dispute settlement panel ruling against the United States' import ban on Mexican yellowfin tuna in 1991.[35] The United States imposed the import ban pursuant to the Marine Mammal Protection Act because Mexico had failed to obtain United States certification that its tuna harvesting methods had an incidental dolphin kill rate comparable to that of the United States tuna fishing industry.[36] The GATT dispute settlement panel found that because the Marine Mammal Protection Act's import restrictions did not regulate "products as such," the import restrictions were not an "internal product regulation" that could be evaluated and permitted under Article III of the GATT, which permits product regulations if they do not favor domestic products over "like products" of foreign origin.[37] In other words, because the Marine Mammal Protection Act imposed process, not product, restrictions on the tuna fishing industry, it violated the GATT.

The fact that the federal organic food regulations focus on process may at first seem a cause for celebration to environmentalists accustomed to decrying this GATT dispute resolution panel decision and advocating for attention to and regulation of the processes of producing consumer goods.[38]

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[33] *Id*. at 311.

[34] *See, e.g.*, Doug Kysar, *Preferences for Processes: The Process/Product Distinction and the Regulation of Consumer Choice*, 118 HARV. L. REV. 525, 540 (2004) (discussing the role the process-product distinction has played in several legal areas); Sanford E. Gaines, *Processes and Production Methods: How to Produce Sound Policy for Environmental PPM-Based Trade Measures*, 27 COLUM. J. ENVTL. L. 383 (2002); Alan Isaac Zreczny, *The Process/Product Distinction And The Tuna/Dolphin Controversy: Greening The GATT Through International Agreement*, 1 BUFF. J. INT'L L. 79 (1994).

[35] *See* GATT Dispute Panel Report on U.S. Restrictions on Imports of Tuna, Sept. 3, 1991, GATT B.I.S.D. (39th Supp.) at 155 (1993).

[36] *Id.* at 156–60, 191–92.

[37] *Id.* at 193–95.

[38] John H. Jackson, *The Limits of International Trade: Workers' Protection, the Environment and Other Human Rights*, 94 AM. SOC'Y INT'L L. PROC. 222, 224 (2000) (describing advocacy organizations' outrage at the GATT ruling). *See also, e.g.*, Natural Resources Defense Council, *A Consumer's Guide to Buying Clean Energy* (urging consumers in states that have opened their electricity markets to competition to pay attention to the process of energy

Paying attention to the process by which goods are produced or harvested, is certainly important to environmental protection efforts. But in the case of organic food regulations, focusing solely on process may have consequences of concern to environmentalists. Defining the term organic in a manner that focuses solely on process, at least as the federal government has done, may mislead consumers who falsely believe, as Part II of this Article explains, that organic labels signify product characteristics such as a lack of pesticide residues or genetically engineered content. Consumers' beliefs that organic food is a safe haven from pesticides and genetically engineered ingredients may affect consumers' interests in and opinions about policy issues relating to pesticides and biotechnology, thus impacting political debate and activism on these topics. A process-focused definition may also discourage organic farmers from advocating against the use of pesticides and biotech crops, because such advocacy could destroy consumers' belief that organic food is purer than it is, a belief that clearly benefits organic farmers. The regulations also may fail to create incentives for conventional farmers to prevent pesticides and genetically engineered pollen and seeds from drifting away from their intended targets. Part II explores these potential consequences of the federal organic regulations through an elaboration of the regulations' process-based approach.

Part III discusses the differences between the regulatory definition of organic and consumers' common understanding of the term, which is at least partly product-based. It explains that these differences place the organic regulations in some tension with federal false advertising principles, and it evaluates the extent to which consumers are not getting what they pay for when they buy organic food. Part III also explores why products that do meet consumer expectations for organic food have not emerged on the market. The ways in which consumers' perception of organic food affects their attitudes towards pesticides and genetically engineered crops, and thus consumers' political engagement on these issues, is discussed in Part IV. Part IV also explains how the regulations give organic farmers, who benefit from consumer ignorance, an incentive to refrain from publicly complaining about

production and to purchase power from companies that produce at least half of their power through solar, wind, and other clean sources) *at* http://www.nrdc.org/air/energy/gcleanen.asp (last revised Oct. 12, 2004).

agricultural practices that contaminate organic food, thereby removing those who might otherwise be the most likely political advocates against pesticides and genetically engineered crops from the debate. Part V then explores how the process-based definition of organic will likely make it harder for an organic farmer to obtain compensation in tort for crop contamination, and how this affects both conventional and organic farmers' incentives to prevent such contamination. Part VI discusses possible alternative approaches to organic food regulation and labeling.

A note about terminology is called for at the outset. Throughout this Article, "genetic engineering," "biotechnology," and "bioengineering" are used interchangeably to refer to modern technological methods used to give a plant or animal a new combination of heritable traits by inserting altered DNA or by transferring DNA from another species into the cells of the plant or animal.[39] The Article avoids using the acronyms "GM," which stands for "genetically modified," and "GMO," which stands for "genetically modified organism," because these terms have been criticized as imprecise on the ground that traditional selective breeding techniques have been used for centuries to enhance desirable plant and animal traits so that almost all cultivated food is in some way genetically modified.[40] Because these acronyms are commonly used in public discourse to refer to the products of modern bioengineering technologies, however, they sometimes appear herein in quotations or in discussions of public debates. In general, because this Article focuses on the lay public's perceptions of the food supply, it uses all of these terms as they are used by the lay public and the popular press.

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[39] *See* JOHN E. SMITH, BIOTECHNOLOGY 38 (3d ed. 1996); ALAN MCHUGHEN, PANDORA'S PICNIC BASKET 9–10 (2000); Kysar, *supra* note 34, at 553–56. These methods are often referred to as recombinant DNA (rDNA) technologies. *See* U.S. Food and Drug Admin., *Draft Guidance for Industry: Voluntary Labeling Indicating Whether Foods Have or Have Not Been Developed Using Bioengineering*, *available at* http://vm.cfsan.fda.gov/~dms/biolabgu.html (2001).

[40] *See* U.S. Food and Drug Admin., *supra* note 39 ("Terms like 'not genetically modified' and 'GMO free,' that include the word 'modified' are not technically accurate unless they are clearly in a context that refers to bioengineering technology. 'Genetic modification' means the alteration of the genotype of a plant using any technique, new or traditional. . . . Most, if not all, cultivated food crops have been genetically modified."); Rebecca Bratspies, *The Illusion of Care: Regulation, Uncertainty, and G.M. Food Crops*, 10 N.Y.U. ENVTL. L.J. 297, 302–304 (2002) (explaining the differences between traditional breeding and genetic engineering in their approach to modifying crop traits).

II. THE NATIONAL ORGANIC STANDARDS' PROCESS NOT PRODUCT APPROACH

A. *Overview of the Organic Food Regulations*

The regulations promulgated by the USDA pursuant to the Organic Foods Production Act, which are called the National Organic Program (NOP) regulations, provide process-based requirements for the production and handling of food to be labeled, sold, or represented as organic.[41] These requirements generally take the form of prohibitions on production and processing methods. The regulations prohibit the use of most synthetic materials to control pests and weeds.[42] They also prohibit methods "used to genetically modify organisms or influence their growth and development by means that are not possible under natural conditions."[43] Such prohibited genetic-modification methods, as defined by the regulations, include recombinant DNA technology, but not traditional breeding, hybridization, or in vitro fertilization.[44] The regulations also prohibit most uses of ionizing radiation,[45] the application of sewage sludge as fertilizer,[46] and the use of drugs or hormones to promote growth in livestock.[47] Additionally, the regulations specify that crops may not be grown on land to which prohibited substances have been recently

[41] National Organic Program Rule, 7 C.F.R. § 205.100(a) (2003).

[42] *Id.* § 205.206(d). When nonsynthetic inputs and methods fail to control crop pests and weeds, synthetic substances that have been approved for use in organic production may be used. *Id.* § 205.206(e). As required by the Organic Food Production Act and the National Organic Program regulations, the Department of Agriculture maintains a "National List" of allowed synthetic substances and prohibited nonsynthetic substances. *See* Organic Foods Production Act of 1990, 7 U.S.C. § 6517 (2000); 7 C.F.R. §§ 205.600–205.607.

[43] 7 C.F.R. § 205.105(e) (prohibiting use of "Excluded methods"); § 205.2 (defining "Excluded methods").

[44] *Id.* § 205.2 (defining "Excluded methods").

[45] *Id.* § 205.105(f).

[46] *Id.* § 205.105(g).

[47] *Id.* § 205.237(b)(1). Nor may organic producers "feed mammalian or poultry slaughter by-products to mammals or poultry," *id.* § 205.237(b)(5), a prohibition widely advertised by organic beef producers after mad cow disease was detected in the United States. *See, e.g.*, Organic Trade Association, *Facts Concerning the Production of Organic Beef*, *at* http://www.ota.com/organic/foodsafety/OrganicBeef.html (last visited Feb. 21, 2005); Diamond Organics, *Organic Beef & Bison: Organic Meat Provides Alternative for Shoppers on Edge About Mad Cow Disease*, *at* http://www.diamondorganics.com/ShowView/prod_detail_list/56 (last visited Feb. 21, 2005).

applied—at least three years must pass between any application of prohibited substances and the harvesting of organically labeled crops.[48]

The NOP regulations also contain some positive requirements. For example, organic farmers "must select and implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of soil and minimize soil erosion."[49] Organic livestock producers must provide "conditions which allow for exercise, freedom of movement, and reduction of stress appropriate to the species."[50] They must also give ruminants access to pasture and ensure that all livestock have clean, dry bedding.[51] In addition, facilities that handle organic food must use management practices to prevent pests, such as removing pest habitat and food sources, preventing pest access to handling areas, and controlling temperature and light to prevent pest reproduction.[52]

In order to ensure that producers and processors of organic products comply with these requirements, anyone with over $5000 in gross annual income from organic sales must create an "organic system plan."[53] The plan must describe all the practices and procedures the producer or handler will use to create organic products.[54] The plan is required to be fairly detailed, describing the frequency with which all procedures will be performed, the steps that will be taken to monitor compliance, and the composition and source of every substance used in production or handling as well as the location where it will be used.[55]

An accredited certifying agent must certify that an organic producer or processor has an adequate organic system plan and is complying with the plan before the producer or processor may

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[48] 7 C.F.R. § 205.202(b).

[49] *Id.* § 205.203(a).

[50] *Id.* § 205.238(a)(4).

[51] *Id.* § 205.239(a)(2)–(3).

[52] *Id.* § 205.271(a).

[53] *Id.* § 205.101(a), § 205.201. A production or handling operation that sells agricultural products as "organic" but whose gross agricultural income from organic sales totals $5000 or less annually is exempt from certification requirements and from submitting an organic system plan but must comply with all of the NOP regulations' other applicable organic production, handling, and labeling requirements. *Id.* § 205.101.

[54] 7 C.F.R. § 205.201(a).

[55] *Id*.

label her products organic.[56] Certifying agents must be accredited by the Department of Agriculture or, if foreign, by a foreign government with equivalent standards.[57] They may be private or governmental entities, but at the present time only 19 states and counties have established certifying bodies, so most domestic certifiers are private entities.[58] Although certifying agents essentially play the role of federal regulators in that they monitor compliance with the federal organic regulations, certifying agents are paid by the producers and processors that use their certification services,[59] not by the USDA or any other governmental entity.

The NOP regulations establish a set of steps necessary to obtain organic certification. First, a producer or processor seeking organic certification must submit an organic system plan to an accredited certifying agent. The certifying agent reviews the plan to see if it meets the requirements set out in the Act and regulations. If the plan complies, the certifying agent conducts an on-site inspection to verify that the organic system plan accurately reflects the operation's practices.[60] The NOP regulations require the certifying agent grant organic certification if the agent determines that the organic system plan and all procedures and activities of the applicant's operation are in compliance with the regulations and that the applicant will be able to comply with the organic system plan.[61] Once the operation is certified, the certifying agent must conduct at least one on-site inspection annually in order to determine whether the operation is still in compliance.[62]

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[56] *Id.* § 205.100. Certification is not required for entities with less than $5,000 in gross annual income from organic sales. *See supra* note 53.

[57] *Id.* § 205.500.

[58] *See* Agricultural Marketing Service, *The National Organic Program: Accredited Certifying Agents* (listing 58 domestic accredited certifiers, of which only 19 were governmental entities), *at* http://www.ams.usda.gov/nop/CertifyingAgents/Accredited.html (last visited Feb. 8, 2005).

[59] 7 C.F.R. §§ 205.400(e), 205.501(a)(16); *see also* Certified Organic Inc., *Services* (listing the fees of a certifying agency), *at* http://www.certifiedorginc.org/services.htm (last visited Feb. 23, 2005). In 15 states, federal cost sharing funds are available to reimburse organic farmers for a portion of their certification fees. *See* Notice of Agricultural Management Assistance Organic Certification Cost-Share Program, 69 Fed. Reg. 51,229 (Aug. 18, 2004).

[60] 7 C.F.R. § 205.403(c).

[61] *Id.* § 205.404(a).

[62] *Id.* § 205.403(a).

B. *Lack of Mandatory Product Testing for Pesticide Residue or Genetically Engineered Content*

All of the NOP regulation requirements just described are process related. They specify things that organic producers and processors must and must not do if they wish to sell their products as organic. They do not set quality or content standards for organic products themselves, let alone create a mandatory product testing system to enforce such standards. The USDA has made clear that this focus on the production process was deliberate. In the Federal Register notice announcing the NOP regulations, the USDA stated:

> The emphasis and basis of these standards is on process, not product. We have specifically structured the provisions relating to excluded methods to refer to the use of methods. [Prohibiting] the products of excluded methods . . . would not be consistent with this approach to organic standards as a process-based system.[63]

The USDA designed the NOP regulations to focus on process despite the fact that the Organic Foods Production Act, the law pursuant to which the regulations were promulgated, is not exclusively process-based. In the Organic Foods Production Act, Congress specified that the program for organic certification called for by the Act should "require periodic residue testing by certifying agents of agricultural products that have been produced on certified organic farms and handled through certified organic handling operations."[64] The Act explains that the purpose of periodic residue testing is "to determine whether such products

[63] National Organic Program, 65 Fed. Reg., 80,547, 80,549 (Dec. 21, 2000) (codified at 7 C.F.R. § 205). The USDA made similar statements in the Federal Register notice in response to public comments on drafts of the organic rules in which people expressed concern that pollen drifting from near-by farms with genetically engineered crops would contaminate crops on organic operations. *Id.* at 80,556. The USDA's response was: "When we are considering drift issues, it is particularly important to remember that organic standards are process based. . . . This regulation prohibits the use of excluded methods in organic operations. The presence of a detectable residue of a product of excluded methods alone does not necessarily constitute a violation of this regulation. As long as an organic operation has not used excluded methods and takes reasonable steps to avoid contact with the products of excluded methods as detailed in their approved organic system plan, the unintentional presence of the products of excluded methods should not affect the status of an organic product or operation." *Id.*

[64] 7 U.S.C. § 6506(a)(6) (2000).

contain any pesticides or other nonorganic residue or natural toxicant."[65]

The Senate Report on the Act describes why this product-testing requirement is important, explaining that even if organic farmers follow strict organic standards, they "may produce products with minimum residues due to inadvertent environmental contamination such as drift from a neighboring farm."[66] The Report says that organic food is not synonymous with residue-free food but that "residue testing plays an important role in organic certification." [67] According to the Report, there are two primary reasons to conduct residue testing:

> First, residue testing is an important check on the honesty of the system. Periodic random residue testing will help in policing against mislabeling. If a product labeled organically produced contains any detectable residue of a prohibited substance such as a synthetic pesticide, an investigation shall take place to determine whether the requirements under this title and the applicable State certification program have been violated.
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> Second, residue testing bridges the concept that organically produced food is defined by the manner in which such food was produced and the widely-held concept that organically produced food has fewer residues. It is important that organically produced food meet certain standards to ensure that consumers are getting what they pay for. This legislation provides that if prohibited materials are present at levels that are greater than the unavoidable residual environmental contamination . . . then such food shall not be labeled organically produced.[68]

Residue testing could serve functions on both sides of the process-product distinction. First, testing could be used to enforce process rules. Although often conducted on the final product, residue testing could be used to monitor whether organic process requirements, in particular, prohibitions on synthetic pesticide use, had been obeyed. Levels of pesticide residues so high that they

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[65] *Id.* The Act also requires certifying agents aware of a violation of applicable laws relating to food safety to report the violation to the appropriate health agencies. *Id.*

[66] S. REP. NO. 101-357, at 300 (1990), *reprinted in* 1990 U.S.C.C.A.N. 4656, 4954.

[67] *Id.*

[68] *Id.*

could not be explained by anything other than direct, intentional applications of pesticides, for example, would indicate that organic process standards had been violated. Second, residue testing could be used to enforce organic product standards. If the regulations established a product standard, such as a requirement that organic food have no detectable levels of synthetic pesticides, or a rule that established limits on pesticide content, residue testing could be used to determine whether products were in compliance with that standard.

The language of the Senate Report indicates that the Senate intended residue testing to serve both of these functions. "Policing against mislabeling" appears to refer to enforcement of process standards, with the investigation triggered by a detection of synthetic pesticide residues presumably being an investigation into production processes.[69] Ensuring that consumers get "what they pay for" (food with "fewer residues"), however, refers to product standards. The report envisions product standards that would allow only trace amounts of pesticides in organic food, reflective of levels of the "unavoidable residual of environmental contamination."

Whether Congress thought the residue testing requirement in the Organic Foods Production Act would primarily serve the function of enforcing process standards, product standards, or both, the current NOP regulations serve neither function, as the regulations do not require any form of random or periodic residue testing. Instead, the regulations say that the Administrator, the applicable State organic programs' governing State official, or certifying agents "may require" preharvest or postharvest testing of any agricultural input used or agricultural product to be sold, labeled or represented as organic "when there is reason to believe that the agricultural input or product has come into contact with a prohibited substance or has been produced using excluded methods."[70] The regulations further specify that such tests must be conducted at the official's or certifying agent's own expense.[71] If a certifying agent or governmental official chooses to conduct such testing, and the test detects residue at levels greater than five percent of an established Environmental Protection Agency

[69] *Id.*
[70] 7 C.F.R. § 205.670(b).
[71] *Id.*

tolerance for the specific residue detected, only then do the regulations prohibit labeling the product as organic.[72]

Product testing is very unlikely to occur under the current rule. First, the regulation says only that certifying agents "may" require testing when there is reason to believe that a product has been contaminated,[73] not that the certifying agent "must" require testing. Certifying agents are hired directly by the producers. Thus, due to competition with other certifying agents for producers' business, certifying agents face pressures to keep prices as low as possible and to minimize the burdens placed on farmers.[74] Certifying agents risk losing clients to less strict certifiers if they impose burdens on farmers not required by law. The regulations further magnify the incentive not to conduct product testing by specifying that any testing must be conducted at the "certifying agent's own expense."[75]

Additionally, the NOP regulations only provide that certifying agents may require testing when they "have reason to believe" that a product has come into contact with a prohibited substance.[76] Because certifying agents are only required to inspect producers' or processors' operations upon their initial certification as organic and once a year thereafter,[77] certifying agents are unlikely to personally observe that a product has come into contact with a prohibited substance even if it has. And although the regulations require people seeking organic certification to notify their certifying agent of any "application, including drift, of a prohibited substance to any field, production unit, site, facility, livestock, or product,"[78] organic producers may themselves not be aware that contamination has occurred. Genetically modified pollen could be

[72] *Id.* § 205.671.

[73] *Id.* § 205.670(b).

[74] *See* Agricultural Marketing Service, *supra* note 58 (listing 99 USDA accredited certify agents) (last visited Feb. 8, 2005); *see also, e.g.*, Certified Organic, Inc., *Certified Organic, Inc.* (advertising "simple, time saving, and reasonably priced organic certification" nationally), *at* http://www.certifiedorginc.org/ (last visited Feb. 8, 2005); California Certified Organic Farmers, *The Steps to Certification* (advertising a national organic certification program), *at* http://www.ccof.org/certification.php. (last visited Feb. 8, 2005).

[75] 7 C.F.R. § 205.670(b).

[76] *Id.*

[77] *Id.* § 205.403(a)(1).

[78] *Id.* § 205.400(f)(1).

brought by wind or by pollinators to pollinate an organic producer's crop without the organic producer realizing it. Or pesticides applied to a neighboring farm could blow over to parts of an organic producer's fields or flow into water sources used for irrigation without it being obvious to the organic producer.

From the outset, the USDA displayed resistance to adopting any residue standards at all, and thus it is consistent that the ultimate regulations are written in a manner that discourages residue testing. In an internal memo regarding an early draft of the first proposed regulations, the Administrator of the Agricultural Marketing Service, the branch of the USDA that drafted the NOP regulations, rejected the suggestion that there be a cap on the amount of pesticide residue present in organic products.[79] The memo explained that if the USDA were to forbid products containing more than five percent of the EPA's tolerance level for a pesticide from being sold as organic, this would establish "organic as being a 'safer' food, and our program is not a food safety program."[80] The second set of proposed rules, those issued in March 2000, did include a pesticide residue cap, but the cap was extremely lenient—equal to the average level of residue detected in conventional foods of the same type.[81] In the final regulations, the residue limit was lowered to five percent of the Environmental Protection Agency's tolerance for the specific residue detected.[82] Nonetheless, this is not a general product standard that applies, even in principle, to all organic food. This standard only applies when a particular product has been residue tested by a government official or certifying agent. As discussed above, this testing will likely occur infrequently, if at all.

Interestingly, most of the state organic laws that existed prior to enactment of the Organic Foods Production Act were not exclusively process based. Most of those state laws provided for

[79] Memorandum from Lon S. Hatamiya, Administrator, Agricultural Marketing Service, USDA, to Michael V. Dunn, Assistant Secretary, Marketing and Regulatory Programs, USDA (May 1, 1997) [hereinafter Hatamiya], http://www.motherjones.com/news/outfront/1998/05/usda_doc1.html (last visited Feb. 21, 2005).

[80] *Id.*

[81] National Organic Program, 65 Fed. Reg. 13,512, 13,631 (proposed Mar. 13, 2000) (setting the residue cap at "the estimated national mean of detected residues for specific commodity/pesticide pairs, as demonstrated by USDA's Pesticide Data Program").

[82] 7 C.F.R. § 205.671.

residue testing,[83] established residue limits for all organic products,[84] or both.[85] One state, for example, defined organic food as "natural food which has not been subjected to pesticides, commercial fertilizers, . . . or hormones."[86]

C. *Allowance of Organic Labels on Foods Known to Be Contaminated by Products of Genetic Engineering*

The organic regulations only address genetic engineering by prohibiting the intentional use of genetic engineering methods in the production of organic food.[87] The regulations make no mention of contamination by bioengineered pollen or seed. Even if an organic producer somehow became aware of such contamination and the producer's notice to his or her certifying agent led to residue testing, which in turn revealed contamination, the regulations do not prohibit the product from being sold as organic. Although the regulations do provide that "when residue testing detects prohibited substances at levels that are greater than 5 percent of the Environmental Protection Agency's tolerance for the specific residue detected or unavoidable residual environmental contamination, the agricultural product must not be sold, labeled, or represented as organically produced," there is no

[83] *See, e.g.*, COLO. REV. STAT. ANN. § 35-11.5-104(1)(e) (West 1989) (repealed 2002); IDAHO CODE § 22-1103(d) (Michie Supp. 2004); N.M. STAT. ANN. § 76-22-13(5)–(6) (Michie 1978 & Supp. 2001); OKLA. STAT. ANN. tit. 2, § 5-304(B) (West 2000) (current version at OKLA. STAT. ANN. tit. 2, § 5-304(C)); TEX. ADMIN. CODE. tit. 4, § 18.18 (1988) (repealed 1994).

[84] *See, e.g.*, CAL. HEALTH & SAFETY CODE § 26569.12 (West 1982); ME. REV. STAT. ANN. tit. 7, § 553(2)(B) (West 2002) (repealed 2004); MONT. CODE ANN. § 50-31-222 (4) (1989) (repealed 1999); N.H. REV. STAT. ANN. § 426:6-a (1986) (amended 2002); VA. CODE ANN. § 3.1-385.3(B) (Michie 1990) (repealed 2003). Surprisingly, some of these residue limits were quite lenient. They ranged from 1% of the residue levels allowed by the United States Food and Drug Administration (FDA), N.H. REV. STAT. ANN. § 426:6-a (1986) (amended 2002), all the way to 10% of the level regarded as safe by the FDA. ME. REV. STAT. ANN. tit. 7, § 553(2)(B) (West 2002) (repealed 2004).

[85] *See, e.g.*, OR. REV. STAT. § 616.411, § 616.421(6) (1989) (repealed 2001); WASH. REV. CODE ANN. §§ 15.86.070 (West 2004), 15.86.100 (West 1993) (§ 15.86.100 repealed 2002).

[86] CONN. GEN. STAT. ANN. § 21a-92(19) (West 1994) (amended 1998).

[87] *See* 7 C.F.R. § 205.105(e) (prohibiting use of "Excluded methods"), § 205.2 (defining "Excluded methods" to include "a variety of methods used to genetically modify organisms or influence their growth and development by means that are not possible under natural conditions or processes . . . including . . . recombinant DNA technology").

EPA tolerance level for the products of genetic engineering. Therefore, as weak as the USDA product standards are with regard to pesticide contamination, they are even weaker with regard to biotech contamination – the regulations do not establish any limit whatsoever on contamination by genetically engineered materials.

The Department of Agriculture's Federal Register comments accompanying the announcement of the National Organic Program regulations explicitly admit that the regulations do not create a "zero tolerance" standard for contamination with products of genetic engineering.[88] The comments explain that detection of products of genetic engineering by a certifying agent should trigger an investigation by the certifying agent "to determine if a violation of organic production or handling standards occurred."[89] But because those standards only govern the organic producer or handler's intentional actions, "the presence of a detectable residue alone does not necessarily indicate use of a product of excluded methods that would constitute a violation of the standards."[90]

This permissiveness is perhaps not surprising given that the USDA initially drafted the organic regulations to allow the use of genetic engineering outright.[91] An internal memo from the Administrator of the Agricultural Marketing Service provides some explanation for the USDA's motivation for initially allowing genetic engineering:

> [C]ertain interest groups, such as NCAMP and Greenpeace, have said they will "wage war" on USDA if the draft proposed rules permit GMOs. Few if any existing [organic] standards permit GMOs and their inclusion could affect they [sic] export of U.S. grown organic product. *However, the Animal and Plant Health Inspection Service and the Foreign Agricultural Service are concerned that our trading partners will point to a USDA organic standard that excludes GMOs as evidence of the Department's concern about the safety of bioengineered commodities.*[92]

This should not be taken to mean that the NOP regulations welcome pesticide or genetic drift. The regulations do require

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[88] National Organic Program, 65 Fed. Reg. 80,548, 80,632 (Dec. 21, 2000) (codified at 7 C.F.R. pt. 205).

[89] *Id.*

[90] *Id.*

[91] *See supra* notes 23–25 and accompanying text.

[92] Hatamiya, *supra* note 79 (emphasis added).

some efforts on the part of the producers and processors to prevent contamination of organic products. Specifically, the regulations require that the organic system plan describe what steps the producer or processor will take to "prevent contact of organic production and handling operations and products with prohibited substances."[93] Additionally, they require that the fields on which crops intended to be sold as organic are grown have "distinct, defined boundaries and buffer zones such as runoff diversions to prevent the unintended application of a prohibited substance to the crop or contact with a prohibited substance applied to adjoining land that is not under organic management."[94] As discussed above, however, despite requiring these process-based restrictions to guard against drift, the regulations do not require testing to ensure that the measures are successful.

D. *Existence of Unintentional Contamination*

Because food produced in accordance with the NOP regulations will not be intentionally sprayed with pesticides or intentionally grown or raised using genetically engineered seed or other inputs, the likelihood of the presence of pesticide residue or genetically engineered content will clearly be lower than in foods intentionally produced with pesticides and genetic engineering techniques. But organic food will not be free of such contamination. Evidence clearly indicates that both pesticides and genetically engineered plant materials often drift beyond their intended applications,[95] and organic food, like any food, may be

[93] 7 C.F.R. § 205.201(a)(5).

[94] *Id.* § 205.202(c).

[95] *See, e.g.*, Lynton W. Baker et al., *Ambient Air Concentrations of Pesticides in California*, 30 ENVTL. SCIENCE & TECH. 1365 (1996) (reporting results from monitoring of ambient community air that showed health threatening levels of three different agricultural pesticides); Tom Knudson et al., *Globe-Trotting Genes Welcome or Not, Modified Strains Pop up in Crops Near and Far*, SACRAMENTO BEE, June 7, 2004, at A1 (reporting widespread contamination of organic canola farms by windblown GM canola from nearby farms in Saskatchewan, Canada and the presence of genetically engineered corn in fields in a small village in Oaxaca, Mexico where it was not intentionally planted); Mariana Gonzalez et al., *Occurrence and Distribution of Organochlorine Pesticides (OCPs) in Tomato (Lycopersicon esculentum) Crops from Organic Production*, 51 J. AGRIC. FOOD CHEMISTRY 1353, 1358 (2003) (reporting that a study of organic tomatoes grown on a farm in Argentina to which agricultural chemicals had never been intentionally applied found that the tomatoes contained detectable levels of nine different pesticides).

accidentally contaminated.

1. *Pesticide Drift*

Pesticides can travel beyond their targets through wind dispersion, surface water runoff, or volatilization and subsequent redeposition by precipitation.[96] According to the Administrator of the Agricultural Marketing Service, such drift "occurs constantly."[97] Numerous studies have confirmed evidence of pesticide dispersion, even over long distances. For example, one study detected pesticides in rainwater in the Sierra Nevada Mountains, at concentrations that could be lethal to fish, that had been transported there atmospherically from farms in California's Central Valley.[98] In another study, at least eighty percent of the air samples collected by boat over the Mississippi River from New Orleans, Louisiana to St. Paul, Minnesota during the first ten days of June, 1994, contained the pesticides alochor, chlorpyrifos, diazinon, fonofos, malathion, methyl parathion, metolachlor, metribuzin, pendimethalin, and trifluralin.[99]

This widely documented pesticide drift frequently reaches organic crops, as evidenced by a study in which researchers compared pesticide residues on conventionally grown fruits and vegetables (fruits and vegetables lacking special labeling as to production methods) to pesticide residues on fruits and vegetables labeled as organically grown.[100] The residue data for the study came from three sources: the USDA's pesticide data program, in which the USDA tests a selection of foods, mostly purchased at retail, each year;[101] the California Department of Pesticide Regulation, which collects and test samples of produce from points

[96] Gonzalez et al., *supra* note 95, at 1358.

[97] Hatamiya, *supra* note 79.

[98] John M. Zabik & James N. Seiber, *Atmospheric Transport of Organophosphate Pesticides from California's Central Valley to the Sierra Nevada Mountains*, 22 J. ENVTL. QUALITY 80, 88 (1993). This article also discusses numerous other studies reporting organic chlorine pesticide concentrations in the air at remote locations due to long-range atmospheric transport. *Id.*

[99] Michael S. Majewski et al., *Airborne Pesticide Residues along the Mississippi River*, 32 ENVTL. SCI. & TECH. 3689, 3689 (1998).

[100] B. P. Baker et al., *Pesticide Residues in Conventional, Integrated Pest Management (IPM)-Grown and Organic Foods: Iinsights from Three U.S. Data Sets*, 19 FOOD ADDITIVES & CONTAMINANTS 427 (2002). Study authors defined "organic" according to the USDA organic regulations. *Id.* at 428.

[101] *Id.* at 429.

of entry, packing sites, wholesale facilities, and in retail outlets throughout California;[102] and from the Consumer Union, which conducted residue tests on apples, peaches, green peppers, and tomatoes, purchased at a variety of retail outlets in five cities across the United States.[103] Although the study found that positive residue tests occurred in organic produce only about one-third as often as they occurred in conventional produce,[104] pesticide residues were still frequently present. The study reported that the organic produce tested by the USDA tested positively for pesticide residues 23% of the time,[105] the organic produce tested by the California Department of Pesticide Regulation tested positive 6.5% of the time,[106] and the organic produce tested by the Consumer Union tested positive 27% of the time.[107] Study authors attributed most of this pesticide presence to "the capacity of wind, rain, fog, and irrigation water to move pesticides beyond the fields where they were applied."[108]

2. *Drift of Genetically Engineered Materials*

Moreover, it is clear that genetically engineered materials drift across species as well as across distances. Pollen from genetically engineered plants can be carried miles by wind.[109] It can also be

[102] *Id.* at 430.

[103] *Id.*

[104] *See id.* at 432–34. Paired comparisons of organic fruits and vegetables that tested positively for pesticide residues with conventional fruits and vegetables of the same type that tested positively for pesticide residues indicated that the level of residue was also lower in the organic produce about two thirds of the time. *See id.* at 441.

[105] *Id.* at 432. Some of the pesticides detected were persistent organochlorine pesticides whose use was banned by the time of the study. Presence of these pesticides likely represented persistence in the soil and not drift from pesticide applications during the growing season of the crop in question. *Id.* at 434. When banned pesticides were omitted from the data, the organic produce tested positively only 13% of the time. *Id.* at 433.

[106] *Id.* at 433–34. The study authors attributed the lower incidence of pesticide detection in the California data compared to the USDA data to the fact that the California Department of Pesticide Regulation used a higher limit of detection (the level at which a pesticide must be present for a test to be considered positive) than the USDA. *Id.* at 433.

[107] *Id.* at 434.

[108] *Id.* at 445. The study authors also acknowledged the possibility that some of the produce labeled organic may have actually been conventionally grown produce that was mislabeled. *Id.* at 444.

[109] Andrew Pollack, *Genes From Engineered Grass Spread for Miles, Study Finds*, N.Y. TIMES, Sept. 21, 2004, at A1 [hereinafter Pollack, *Genes Spread*].

disbursed by insect pollinators.[110] The disbursed pollen may then fertilize non-genetically engineered crops, transferring its genetically engineered DNA.[111] A recent study, for example, found that genes from a plot of genetically engineered bentgrass (a species of grass popularly used by golf course operators) had spread to grass thirteen miles away.[112] The genetically engineered grass pollinated not only non-genetically engineered grass of the same species but also wild grass of a different species.[113] A National Research Council study found it unlikely that any single method of biological confinement[114] either currently in existence or in development will be completely effective in preventing such spreading.[115] In addition to drift of pollen, products of genetic engineering may also accidentally mix with or contaminate

[110] *See* MCHUGHEN, *supra* note 39, at 164–65; Janet Adamy, *Modified DNA Found in Test of Traditional Seeds*, WALL ST. J., Feb. 24, 2004, at D5.

[111] Such fertilization would be much less likely to occur in self-pollinating species, such as species that complete pollination before their flowers even open. *See* MCHUGHEN, *supra* note 39, at 164–65; *see also* J.G. VAUGHAN & C. GEISSLER, THE NEW OXFORD BOOK OF FOOD PLANTS 134 (1997) (explaining that in many tomato cultivars, "the yellow anthers enclose the stigma, thus ensuring self-pollination"). In species whose pollen is only viable for a matter of minutes, it is also less likely that pollen from a genetically engineered plant would be able to fertilize plants a long distance away. MCHUGHEN, *supra* note 39, at 164–65. It is also important to note that when pollen from a genetically engineered plant fertilizes a non-genetically engineered plant, the genetically engineered DNA will only be present in the seed or seeds that result from the fertilization. *See* J.A. Bryant & A.C. Cuming, *Molecular Control of Development*, *in* PLANT BIOCHEMISTRY AND MOLECULAR BIOLOGY 287, 300–01 (Peter J. Lea & Richard C. Leegood, eds., 2d ed., 1999); PETER B. KAUFMAN ET AL., PRACTICAL BOTANY 14 (1983). The rest of the non-genetically engineered plant, including any fruit it produces, will be unaffected by the introduced DNA. *See* J.A. Bryant & A.C. Cuming, *supra* at 301, 313. But if the seed is planted and grows into a new plant, that second-generation plant will have the genetically engineered DNA throughout and so should express the genetically engineered traits. *Cf.* KAUFMAN ET AL., *supra* at 18.

[112] Pollack, *Genes Spread*, *supra* note 109.

[113] *Id.* The different species of grass found to be pollinated by the genetically engineered DNA was encountered at a distance of 9 miles downwind from the test farm. *Id.*

[114] For example, one such confinement method is sterilization, which is used to try to prevent genetically engineered organisms from passing their genes to other organisms outside of intentional release settings. *See* COMMITTEE ON BIOLOGICAL CONFINEMENT OF GENETICALLY ENGINEERED ORGANISMS, NATIONAL RESEARCH COUNCIL, BIOLOGICAL CONFINEMENT OF GENETICALLY ENGINEERED ORGANISMS 1 (2004) [hereinafter NATIONAL RESEARCH COUNCIL];

[115] *Id.* at 12; *see also* Andrew Pollack, *No Fool Proof Way is Seen to Contain Altered Genes*, N.Y. TIMES, Jan. 21, 2004, at A10.

"traditional" (not intentionally genetically engineered) foods between the time of harvest and sale.[116] For example, genetically engineered grain could mix with non-engineered grain in grain elevators or transport vehicles.

A recent study by the Union of Concerned Scientists of samples of commercial seed for major food crops found that between fifty and eighty-three percent of samples of traditional seed varieties contain genetically modified DNA.[117] The study did not investigate how the contamination occurred. But study authors hypothesized that the contamination was a resulted from "a system of generally porous seed production and distribution systems."[118] The production system is "porous" because pollen drift may contact plants producing seed and thereby contaminate the seed from those plants. The distribution system is "porous" because seeds may also be mixed with other seeds in the distribution network so that some genetically engineered seed is mixed in with traditional seed varieties.

Specific instances of contamination of organic and conventional crops by genetically engineered crop varieties have begun to spark litigation. For example, a group of organic farmers in Saskatchewan, Canada, has brought a class action lawsuit against Monsanto and Bayer Cropscience claiming that two varieties of genetically engineered canola sold by these companies have spread from the fields in which they were intentionally planted and have contaminated organic farms throughout Saskatchewan.[119]

In sum, drift is frequent. Nonetheless, the NOP regulations govern only the intentional actions taken to produce or process organic food and do not require any testing of the products themselves to determine whether contamination has occurred. Although the regulations forbid the intentional use of most

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[116] *See* MCHUGHEN, *supra* note 39, at 79 (discussing the substantial cost involved in reliably segregating genetically engineered grain from non-genetically engineered grain after it is harvested).

[117] MARGARET MELLON & JANE RISSLER, UNION OF CONCERNED SCIENTISTS, GONE TO SEED: TRANSGENIC CONTAMINANTS IN THE TRADITIONAL SEED SUPPLY 26 (2004). The percentage of the contaminated seed genomes containing contaminated sequences ranged from less than 0.05% to 0.1%. *Id.*

[118] *Id.* at 2.

[119] *See* Amended Statement of Claim at 7, Hoffman v. Monsanto Canada (Q.B. 67 of A.D. 2002), *available at* http://www.saskorganic.com/oapf/pdf/amended-claim.pdf (last visited Feb. 5. 2005).

synthetic pesticides and the products of genetic engineering, a significant fraction of organic food is likely to be contaminated by synthetic pesticides and/or the products of genetic engineering because of the frequency of drift. Much of this contamination likely will go undetected because, although testing of the products is not forbidden, the regulations' design discourages it. If testing nonetheless occurs and contamination is discovered, there is a ceiling on the amount of pesticide contamination that may be present without threatening organic status, but there is no limit on the amount of genetically engineered materials that may be present.

III. CONSUMER MISPERCEPTIONS ABOUT ORGANIC FOOD

A. *Consumers' Interpretations of Organic Food Labels*

Most consumers believe that organic food is free of synthetic pesticide residues and genetically engineered materials. When asked in 2000 about their perceptions of organic foods, sixty-nine percent of consumers described organic food as chemical or residue free.[120] When asked which attributes of organic foods they consider to be "extremely/very important," forty-seven percent of shoppers responded that they are "products with no GMO's."[121] The notion that organic food is free of pesticides and genetically engineered ingredients is so ingrained that even many reporters writing news stories specifically about the USDA's NOP regulations have falsely described the regulations as requiring foods to be free of pesticides and GMOs, suggesting that the reporters have superimposed these ingrained expectations on the regulations.[122] Environmental groups such as the Sierra Club also

[120] A. Elizabeth Sloan, *The Natural & Organic Foods Marketplace*, 56 FOOD TECH. 27, 34 (2002).

[121] *Id.* at 33. *Cf.* Cait Murphy, *The Next Big Thing*, FORTUNE SMALL BUS., June 1, 2003, at 64, 70 (reporting that organic food has become popular with consumers as an alternative to "Frankenfoods").

[122] *See, e.g.*, Judith Graham, *U.S. to Require Organic Food Label Standards*, PITTSBURG POST-GAZZETTE., Oct. 20, 2002, at A14 ("Any edible item that carries an organic label must have Agriculture Department certification that it has never been sprayed with pesticides, shot up with antibiotics, treated with sewage sludge, injected with growth hormones, exposed to irradiation or mingled with genetically modified organisms."); Marty Meitus, *Organic Food Sports New Label: New USDA Regulations Hold Food Industry To Higher Standards*, ROCKY MOUNTAIN NEWS, Oct. 19, 2002, at A27 ("[G]enetically modified foods may not be called organic."); Al Sicherman, *Organic Labeling is on the Way*,

promote organic food as an "excellent way to avoid consuming" genetically engineered foods,[123] and the media routinely describes organic food as free of genetically modified ingredients.[124] Such representations further solidify the common understanding of what organic means.

It appears that the notion that organic food is pesticide free was already entrenched in 1990 when Congress passed the Organic Foods Production Act. In the congressional hearings preceding adoption of the Act, many witnesses testified that consumers believed organic food had absolutely no pesticide or chemical residues.[125] This testimony was not contradicted in the record.[126]

Despite these consumer misperceptions, organic food producers obviously cannot be accused of false or misleading advertising when they use the word organic in accordance with the NOP regulations. Even though consumers take away a false message from organic labels, organic food producers are truthfully claiming that their products are organic, under the legal definition of organic. Organic labeling therefore raises no actual issue of

STAR TRIB. (Minneapolis-St. Paul), Oct. 17, 2002, at T1 (reporting that under the new USDA national standards, "organic foods may not contain genetically modified organisms (GMOs)" and that organic produce is "free of synthetic chemical residues"); Paul Elias, *Labeling Rift Grows among Food Producers*, SAN DIEGO UNION TRIB., Oct. 5, 2002, at C2 (reporting that an organic food company guarantees its products are biotechnology-free).

[123] Sierra Club, *Genetic Engineering*, *at* http://www.sierraclub.org/biotech/factsheet.asp (last visited Feb.7, 2005).

[124] *See, e.g.*, *Morning Edition: North Dakota Farmers Resist Biotech Wheatt* (NPR Radio Broadcast March 10, 2004) [hereinafter *Morning Edition*], (stating that if biotech wheat cross pollinates with organic wheat "by definition, [the] organic wheat would no longer be organic"), *available at* http://www.npr.org/templates/story/story.php?storyId=1754758; Elizabeth Weise, *Transgenic-free may be exception: Environmentalists' study finds widespread "mixing" in crops*, USA TODAY, Feb. 24, 2004, at D8 (referring to organic products as "100% non-transgenic").

[125] *See, e.g., Proposed Organic Certification Program: Joint Hearing Before the Subcomm. on Domestic Mktg., Consumer Relations, and Nutrition, and the Subcomm. on Dep't Operations, Research, and Foreign Agric. of the House Comm. on Agric.*, 101st Cong. 12 (1990) (statement of Rep. Gary Condit, Member, House Comm. on Agric.); *id.* at 171 (statement of Deborah L. Hammel, Director, Standards Development, Scientific Certification Systems, Inc.); *id.* at 214 (statement of Terry L. Witt, Executive Director, Oregonians for Food & Shelter).

[126] *See id.* The hearings did not discuss consumers' beliefs about whether organic food could have genetically engineered content, s*ee id.*, presumably because genetically engineered crops were not yet the focus of much public attention.

false advertising. But the regulations themselves define organic to mean something other than what most consumers think it means. And in other contexts, if a product manufacturer used a term in product marketing to mean something other than what consumers thought it meant, and its marketing or labeling therefore confused even fifteen to twenty-five percent of consumers about the characteristics of its product,[127] the product manufacturer could be enjoined under the Lanham Act from using the term, and possibly could be required to pay damages to competitors.[128] There is therefore significant tension between the way in which the federal regulations define organic and what is considered false advertising under the Lanham Act.

The Lanham Act provides that "[a]ny person who, on or in connection with any goods or services, or any container for goods, uses in commerce any . . . false or misleading representation of fact, which . . . in commercial advertising or promotion, misrepresents the nature, characteristics, qualities, or geographic origin of his . . . goods, services, or commercial activities," may be subject to civil liability.[129] This section of the Lanham Act has been interpreted to impose liability even in instances where the advertising or labeling was not literally false but nonetheless was misleading, deceiving, or confusing to consumers.[130] In such instances, plaintiffs generally prove liability by using consumer

[127] Novartis Consumer Health, Inc. v. Johnson & Johnson-Merck Consumer Pharm. Co., 290 F.3d 578, 594 (3d Cir. 2002) ("[W]e believe that survey evidence demonstrating that 15% of the respondents were misled . . . is sufficient to establish the 'actual deception or at least a tendency to deceive a substantial portion of the intended audience,' necessary to establish a Lanham Act claim for false or misleading advertising under section 43(a).") (internal citation omitted); Stiffel Co. v. Westwood Lighting Group, 658 F. Supp. 1103, 1114 (D.N.J. 1987) (holding that the potential that between 22% and 57% of consumers would be misled was sufficient to warrant preliminary injunctive relief under the Lanham Act); R.J. Reynolds Tobacco Co. v. Loew's Theatres, Inc., 511 F. Supp. 867, 876 (S.D.N.Y. 1980) (finding a deception rate of between 20% and 33% sufficient to warrant preliminary injunctive relief); McNeilab, Inc. v. Am. Home Prod. Corp., 501 F. Supp. 517, 527 (S.D.N.Y.1980) (finding a study that showed confusion on the part of 23% of consumers sufficient to support a claim that the Lanham Act had been violated).

[128] *See* Xoom, Inc. v. Imageline, Inc., 323 F.3d 279, 286 (4th Cir. 2003) (describing the requirements for obtaining damages under the Lanham Act).

[129] Lanham Act § 43, 15 U.S.C. § 1125(a) (2000).

[130] *See, e.g.*, Southland Sod Farms v. Stover Seed Co., 108 F.3d 1134, 1140 (9th Cir. 1997); Sandoz Pharm. Corp. v. Richardson-Vicks, Inc., 902 F.2d 222, 228–29 (3d Cir. 1990); Am. Home Prod. Corp. v. Johnson & Johnson, 577 F.2d 160, 165–66 (2d Cir. 1978).

surveys in which consumers are asked to interpret promotional statements to show that the statements are misleading, deceiving, or confusing.[131] For example, in a case about antacid product promotion, the Third Circuit upheld a preliminary injunction prohibiting Johnson & Johnson from using the product name "Mylanta Night Time Strength" because consumer surveys indicated that at least fifteen percent of consumers believed that labels bearing this name indicated that the antacid product would relieve symptoms throughout the night. In fact, there was no evidence that relief would last that long.[132] In a case about orthodontic dental brackets marketed as "polysapphire" brackets, the Second Circuit reviewed testimony that "sapphire" means a gem composed of a single large crystal of aluminum oxide and survey data indicating that forty-five percent of orthodontists thought "polysapphire," a coined term, referred to a type of sapphire.[133] Because the product in question was actually made of multiple tiny individual grains of aluminum oxide, and testimony indicated that it was not conventional to refer to individual grains of aluminum oxide as sapphires, the Second Circuit found that the coined marketing term conveyed a false message and so violated the Lanham Act.[134] The court therefore instructed the District Court to enter an injunction prohibiting the use of the term polysapphire in relation to the dental bracket product.[135] Because the frequency of consumer confusion about organic labels is far greater than the frequency of consumer confusion that triggers liability under the Lanham Act, [136] the design of the regulatory

[131] Clorox Co. Puerto Rico v. Proctor & Gamble Commercial Co., 228 F.3d 24, 36 (1st Cir. 2000) (explaining that consumer surveys are the typical mode of proof in Lanham Act cases); *Sandoz Pharm. Corp*., 902 F.2d at 229 (same); *Am.Home Prod. Corp*., 577 F.2d at 165–166 ("[W]e are asked to determine whether a statement acknowledged to be *literally true and grammatically correct nevertheless has a tendency to mislead, confuse or deceive. . . . The question in such cases is—what does the person to whom the advertisement is addressed find to be the message?*"); Thomas W. Edman, *Lies, Damn Lies, and Misleading Advertising: The Role of Consumer Surveys in the Wake of Mead Johnson v. Abbott Labs*, 43 WM. & MARY L. REV. 417, 429–30 (2001).

[132] *Novartis Consumer Health, Inc*., 290 F.3d at 594.

[133] Johnson & Johnson v. GAC Int'l, Inc., 862 F.2d 975, 977–78 (2d Cir. 1988).

[134] *Id.* at 982.

[135] *Id.*

[136] *See* Sloan, *supra* note 120, at 34 fig.6 (showing range of consumer perceptions about organic food).

definition of organic is in tension with the commitment to accuracy in product promotion embodied elsewhere in federal law.

B. *Whether Consumers Get What They Are Paying for*

Does the fact that consumers misinterpret organic labels mean that consumers do not get what they are paying for? Organic food generally costs more than conventionally produced food—organic dairy products, for example, have a fifty percent or higher price premium in the United States.[137] Whether a consumer receives any benefit in return for paying the price premium depends on which of the many possible reasons for buying organic food motivates the consumer. Some of the reasons for buying organic food, in particular concern for the environment and family farmers, are unaffected by the fact that the NOP regulations lack product standards. Reasons based on health concerns and religious beliefs, however, are at least partially undermined by the way in which the regulations are written.

Many consumers are motivated to buy organic food at least in part because they think organic farming is less harmful to the environment than conventional farming.[138] They may be concerned, for example, about the more than 750 million pounds of pesticides applied to crops in the United States annually,[139] a significant portion of which permeate the soil, run off into surface water, or seep into groundwater.[140] They also may be concerned about these pesticides killing wildlife or leading to pesticide resistance in plants and insects.[141] Likewise, they may be

[137] MICHAEL SLIGH & CAROLYN CHRISTMAN, RURAL ADVANCEMENT FOUNDATION INTERNATIONAL-USA, WHO OWNS ORGANIC? GLOBAL STATUS, PROSPECTS, AND CHALLENGES OF A CHANGING ORGANIC MARKET 13 (2003), *available at* http://www.rafiusa.org/pubs/OrganicReport.pdf (last visited Feb. 5, 2005).

[138] Sloan, *supra* note 120, at 33.

[139] J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L.Q. 263, 282 (2000).

[140] *Id* at 238; P. A. Matson et al., *Agricultural Intensification and Ecosystem Properties*, 277 SCIENCE 504, 508 (1997).

[141] *See* Geoffrey Cowley, *Are Organic Foods Really Better for You?*, NEWSWEEK, Sept. 30, 2002, at 50, 55 (identifying each of these environmental threats from modern conventional agriculture); *see also* David Pimentel & Lois Levitan, *Pesticides: Amounts Applied and Amounts Reaching Pests*, 36 BIOSCIENCE 86, 90 (1986) (concluding that most species of plants and animals in the U.S. are affected by pesticides released into the environment and that excess pesticides contribute to the development of pesticide resistance).

concerned that conventional farming practices degrade the soil.[142] Or they may fear that the widespread use of antibiotics to promote growth in livestock could lead to antibiotic resistance.[143]

Consumers may also worry that genetically engineered crops will cause environmental harm. They may think that plants genetically engineered to be herbicide resistant could crossbreed with weed species, making those weeds harder to control.[144] They may fear that genetically engineered crops or weed species they crossbreed with will outcompete native species, driving the native species to extinction.[145] They may also worry that crops genetically engineered to produce insecticides will kill monarch butterflies or other non-target insects.[146] Or they may simply worry that altering crops through biotechnology could have some environmental effect that we cannot yet even envision.

Such environmentally-minded consumers essentially do get what they are paying for when they buy organic food, because under the NOP regulations, organic farmers are forbidden from intentionally applying most synthetic pesticides or from intentionally using the products of genetic engineering.[147] Even if organic food may be contaminated by drift of pesticides or genetically engineered pollen from other farms, purchasers of organic food can legitimately be assured that their purchase does not directly support use of these technologies. And organic

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[142] *See* Cowley, *supra* note 141, at 55.

[143] *See* Sierra Club, *Abuse of Antibiotics at Factory Farms Threatens the Effectiveness of Drugs Used to Treat Disease in Humans*, *at* http://www.sierraclub.org/factoryfarms/factsheets/antibiotics.asp (last visited Feb. 7, 2005).

[144] *See* Margaret Rosso Grossman, *Biotechnology, Property Rights and the Environment*, 50 AM. J. COMP. L. 215, 219–220 (2002) (discussing the risk that crops genetically engineered to be herbicide resistant would interbreed with weeds, making the weeds more herbicide resistant).

[145] *See* MCHUGHEN, *supra* note 39, at 162–63 (describing the scientific risk that genetically engineered crops could outcompete native plants); *id*. at 165 (discussing the fear that a "weedy relative" of a genetically engineered crop will be fertilized by pollen from the genetically engineered crop and then "the weedy relative will explode and we will be overrun with them").

[146] *See* BILL LAMBRECHT, DINNER AT THE NEW GENE CAFÉ 77–80 (2001) (describing public concern over a study reported in NATURE that a toxin from corn genetically engineered with Bacillus thuringiensis (Bt) killed monarch butterflies). For the Nature study showing a link between genetically modified corn and adverse affects to monarch butterflies, see J.J.E. Losey et al., *Transgenic pollen harms monarch larvae*, 399 NATURE 214 (1999).

[147] 7 C.F.R. § 205.105, § 205.206(d), § 205.2.

farmers are required to implement tillage and cultivation practices that maintain or improve the condition of the soil and minimize soil erosion.[148] Furthermore, in the absence of illness, organic farmers are prohibited from administering antibiotics or any other animal drug other than vaccinations.[149]

Other consumers are motivated to buy organic food out of a sense of nostalgia for traditional farming, or because they want to support small family farmers. One consumer survey found that forty-six percent of shoppers identified partnerships with small farmers as an extremely or very important attribute of organic food.[150] These consumers often do not get what they are paying for. As of 2003, five extremely large farms controlled half of California's $400 million organic produce market.[151] Archer Daniels Midland, Coca-Cola, Dole, General Mills, H.J. Heinz, Kellogg, Mars, Kraft, Sara Lee, Tyson Foods, and many other large food companies have acquired or made partnerships with organic food brands or companies or have started their own organic lines.[152] Horizon Organic Dairy alone processes and distributes almost seventy percent of the organic milk in the United States and has nearly $200 million in sales each year.[153] The fact that consumers who buy organic food out of a concern for family farmers do not always get what they are paying for is not a result of the NOP regulations' process-focus, however, but a consequence of the way in which the industry has become concentrated as it has grown.

The belief that organic food is healthier than conventional food motivates consumers even more than environmental concerns. Surveys of consumers since the early 1990s have shown that concern about the dangers of eating foods with pesticide residues consistently drives people to seek out organic products.[154]

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[148] *Id.* § 205.203(a).

[149] *Id.* § 205.238(c)(2).

[150] Sloan, *supra* note 120, at 33; *see also* Murphy, *supra* note 121, at 70 (reporting that people believe organic foods are grown "by small-scale salt-of-the-earth family farmers, not massive agribusinesses").

[151] Vijay Cuddeford, *When Organics Go Mainstream*, 33 ALTERNATIVES J. 14 (2003).

[152] SLIGH & CHRISTMAN, *supra* note 137, at 19.

[153] *Id.*

[154] Barbara J. Goldman & Kathryn L. Clancy, *A Survey of Organic Produce Purchasers and Related Attitudes of Food Cooperative Shoppers*, 6 AM. J. ALTERNATIVE AGRIC. 89, 95 (1991) (reporting on a survey of shoppers at a food

In recent years, concern about genetically modified ingredients has come to be another motivation for consumers to seek out organics.[155] Industry experts have noted that the rapid growth in demand for organic food closely tracks consumers' rising worries about the conventional food supply—about pesticides and other chemicals, and, most recently, about genetically engineered ingredients and mad cow disease.[156] Every food scare has been followed by a spike in organic sales.[157] It appears that the desire to protect one's own health and the health of one's family is predominantly what has led people to seek out organic products and pay more for them.

With regard to health, organic consumers are likely getting

cooperative in New York that found that a high level of concern about pesticide residues in produce distinguished shoppers who frequently purchased organic produce from those who did not); Jennifer L. Wilkins & Virginia N. Hillers, *Influences of Pesticide Residue and Environmental Concerns on Organic Food Preference among Food Cooperative Members and Non-Members in Washington State*, 26 J. NUTRITION EDUC. 26, 30 (1994) (reporting on a study that compared food co-op members with non-members from the same geographic area in Washington State that found that concern about pesticide residues was a significant factor in food co-op members' preference for organic food and that environmental concerns were not significant in predicting organic food preference); *see also* Pamela R. D. Williams & James K. Hammitt, *Perceived Risks of Conventional and Organic Produce: Pesticides, Pathogens, and Natural Toxins*, 21 RISK ANALYSIS 319, 323–25 (2001) (reporting on a study of fresh produce purchasers in the Boston area that found that consumers perceived a relatively high level of risk associated with the consumption and production of conventionally grown produce compared with other public health hazards, but that organic food purchasers perceived this level of risk to be even higher than other shoppers did, and that while both categories of consumers perceived that switching to organically grown food produces a significant reduction in pesticide-related risks, organic produce purchasers perceived an even greater safety benefit from choosing organic food).

[155] *See* Michael Pollan, *Naturally: How organic became a marketing niche and a multibillion-dollar industry*, N.Y. TIMES, May 13, 2001, §6 (Magazine), at 30. *See also* Sierra Club, *supra* note 123 (promoting consumption of organic food as a way to avoid eating genetically engineered foods), *at* http://www.sierraclub.org/biotech/factsheet.asp (last visited Feb. 7, 2005).

[156] Pollan, *supra* note 155, at 32; *see also* Murphy, *supra* note 121 ("organic food has made it into the mainstream, not so much by selling the environmental benefits of free-range chickens or pesticide-free soil but as a healthy alternative to factory-farmed 'Frankenfoods.'"); Aikaterini Makatouni, *What motivates consumers to buy organic food in the UK? Results from a qualitative study*, 104 BRITISH FOOD J. 345, 351 (2002) (reporting the results of a study that found that the most important benefit British consumers perceived in organic food was its healthiness for themselves or their families, with environmental values and animal welfare being important but less so).

[157] *See* Pollan, *supra* note 155, at 32.

some of what they pay for under the NOP regulations. Even when organic food is contaminated by pesticides, the levels of pesticide residue are generally lower than in foods to which they were intentionally applied.[158] If health risks increase with exposure, then reducing exposure to pesticides by eating organic food will lower the risks faced by consumers. Yet the process focus of the NOP regulations causes consumers to receive less pesticide reduction than they believe they are getting.[159]

The shortfall is likely even greater with regard to genetically engineered foods. Granted, the United States Food and Drug Administration (FDA) maintains that genetically engineered foods on the market pose no health risk.[160] If the FDA is correct, then contamination of organic foods by products of genetic engineering would not make the organic food any less risky, which would imply that there is no reason to purchase organic food in order to avoid GMO-caused health risks. Consumers who believe that genetic engineering could pose health risks must not fully accept the FDA's assessment. In particular, many consumers believe that they or their family members might be allergic to genetically engineered substances.[161] Consumers who believe that even minimal exposures to genetically engineered substances could trigger allergies would want to avoid foods with any genetically engineered content.

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[158] *See supra* note 104 and accompanying text.

[159] *See infra* section III.A.

[160] *See* U.S. Food and Drug Admin., *supra* note 39 ("[comments advocating disclosure of bioengineered contents on food labels] did not provide data or other information regarding consequences to consumers from eating the foods or any other basis for the FDA to find . . . that such a disclosure was a material fact. Many of the comments expressed concern about the possible long-term consequences from consuming bioengineered foods, but they did not contend that any of the bioengineered foods already on the market have adverse health effects. . . . The agency is still not aware of any data or other information that would form a basis for concluding that the fact that a food or its ingredients was produced using bioengineering is a material fact . . . .").

[161] *See* CALIFORNIANS FOR GE-FREE AGRICULTURE, HELP STOP GENETIC ENGINEERING IN CALIFORNIA (pamphlet listing introduction of new food allergens as the first reason for being concerned about genetic engineering), *available at* http://www.calgefree.org/documents/Whatyoucandosmall_000.pdf (last visited Feb. 27, 2005); MCHUGHEN, *supra* note 39, at 161 (discussing, from the perspective of a scientist developing genetically engineered linseed, what the author sees as legitimate public concerns about genetically engineered foods, and listing fear of newly introduced allergenic proteins as the first legitimate concern).

Consumers may also seek to avoid products of genetic engineering for religious or moral reasons that are distinct from health concerns. The Dharma Realm Buddhist Association (DRBA), for example, has passed a formal resolution about genetically engineered food, which reads:

> DRBA believes that genetic engineering of food is not in accord with the teachings of Buddhism. Buddhism considers genetic engineering of foods to be unwarranted tampering with the natural patterns of our world at the most basic and dangerous levels. DRBA believes that the lack of labeling of genetically engineered food is a de facto violation of religious freedom. Without labeling, Buddhists have no way to avoid purchasing foods that violate their basic religious beliefs and principles. And Buddhist vegetarians have no way to avoid purchasing foods that contain genes from non-vegetarian sources. The DRBA urges all countries to require labeling of all genetically engineered foods.[162]

A nationwide poll conducted by the Pew Initiative on Food and Biotechnology found that thirty-seven percent of Protestants and thirty-four percent of Catholics think that use of biotechnology amounts to humans "playing God."[163] Consumers who believe that genetically engineered materials are religiously taboo will not care whether the amount of genetically engineered content is small or large. Additional groups of consumers, such as those concerned that genetically engineered foods may be derived from non-kosher or non-Halal sources, or vegetarians who may be concerned that such foods may be derived from animal sources, will likewise not care about the amount of genetic material present in food. Any amount will trigger their objection.

Studies of attitudes about genetic engineering have confirmed that many consumers' desire to avoid genetically engineered foods is not dependent on what fraction of a product is affected by genetic engineering. For example, a study of consumer purchasing preferences found that consumers were willing to pay more for

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[162] Ron Epstein, *Buddhism and Measure H: Banning the Growing and Raising of Genetically Modified Organisms in Mendocino County*, 34 VAJRA BODHI SEA 39 (2004), *available at* http://online.sfsu.edu/~rone/Geessays/BuddhismH.htm.

[163] Pew Initiative on Food and Biotechnology, *Genetically Modifying Food: Playing God or Doing God's Work?* (2001), *available at* http://pewagbiotech.org/research/survey7-01.pdf (last visited Jan. 25, 2005).

products labeled "this product is certified to BE FREE OF ANY GM-material" than for products whose label indicated that either one percent or five percent of any ingredient could be genetically engineered.[164] The study found no significant difference, however, in consumers' willingness to pay for the one percent and five percent products.[165] The consumers apparently did not care how high a fraction of genetically engineered content a product had, only whether that fraction was above zero.

For consumers seeking food without any GM-material, it matters a great deal whether organic foods are completely free of genetically engineered materials. If they knew that food could contain genetically engineered materials and still be labeled organic, they might feel that they were not getting what they paid for. Of course, some consumers who fear that genetically engineered materials pose health risks might fear that the materials could be carcinogens or toxins for which lower doses would pose lower health risks. For these consumers, the likelihood that organic food will contain lower amounts of genetically engineered materials could be enough to justify paying the price premium demanded for organic foods. Yet such consumers certainly do not comprise the entire group of consumers that seek organic foods as a way to avoid genetically engineered foods.

C. *Barriers to a Market Solution*

One might expect that, because organic food does not live up to many consumers' expectations and desires, people would begin to offer alternative products that do fulfill consumer expectations. At least hypothetically, someone might create a labeling term such as "truly natural," formulate certification requirements for this label, and set up a certifying agency to monitor compliance. The certification requirements might include similar process rules to the NOP regulations,[166] plus product testing requirements such as a

[164] MATTHEW ROUSU ET AL., ARE U.S. CONSUMERS TOLERANT OF GM FOODS? 7, 10 (Iowa State Univ. Dep't of Econ., Working Paper No. 02014. 2002), *available at* http://www.econ.iastate.edu/research/webpapers/paper_10050_02014.pdf (last visited Jan. 25, 2005).

[165] *Id.* at 11.

[166] In order to satisfy consumers seeking a natural product for environmental reasons, it would be important to have process standards and not just rely on product standards. Because, for example, some synthetic pesticides degrade before harvest and so do not leave residues, a residue standard alone would not prevent farmers from using such pesticides. *See* Letter from Jay J. Vroom,

requirement that at least one sample of every crop harvested be tested for pesticide residues and genetically engineered materials. The new label's product standards could disqualify any crop for which detectable levels of either pesticides or genetically engineered materials were found from being labeled "truly natural." The creators of "truly natural" then might advertise that their label means more than the organic labels—that "truly natural" really means that the food does not contain pesticides or products of genetic engineering, while organic does not.

The federal government, however, has created a number of hurdles to such a market response. First, the Organic Foods Production Act and the USDA NOP regulations restrict the use of the word organic in labels and marketing to products produced in accordance with the Act and regulations.[167] It is illegal to even imply that any other product is organic.[168] Moreover, the regulations prohibit accredited organic certifiers from requiring the producers they certify to comply with standards stricter than those mandated by the NOP regulations.[169] Thus, an organic certifier could not attempt to distinguish the organic foods he certified by developing a reputation for requiring stricter organic standards. Instead, those launching a new label would have to create an entirely new marketing term—one that did not use the word organic. Because consumers already associate the word organic with a lack of pesticide residues and genetically engineered ingredients, getting consumers to understand what a different term or phrase actually meant that would be difficult.

In addition, certifying agents may establish "a seal, logo, or other identifying mark" to be placed on the products they certify only if the certifying agent does not require "compliance with any production or handling practices other than those provided for in [the federal organic rules] as a condition of use" of that mark.[170]

President, American Crop Protection Association, to Keith Jones, Program Manager, National Organic Program (June 12, 2000) (on file with the New York University Environmental Law Review) (comments from American Crop Protection Association regarding Docket No. TMD-00-02-PR2, RIN 0581-AA40: National Organic Program Proposed Rule) [hereinafter American Crop Protection Association],.

[167] 7 U.S.C. § 6505(a)(1)(A); 7 C.F.R. § 205.200.

[168] 7 U.S.C. § 6505(a)(1)(B).

[169] 7 C.F.R. § 205.501(b)(2).

[170] 7 C.F.R. § 205.501(b). If such identifying marks are used, they may not be displayed more prominently than the USDA seal. *Id.* § 205.303(a)(5). An

This condition suggests that any certification organization establishing a new "truly natural" seal or logo might have to refrain from also offering organic certification. This prohibition in turn would mean that if the producers they were certifying also wanted organic certification, the producers would have to pay two separate certifying agencies, which could be prohibitively costly. Alternatively, the certification organization could try to provide both organic certification and "truly natural" certification, but the organization would have to somehow make a name for itself as a trustworthy certifier of "truly natural" products without causing the USDA to consider the "truly natural" label to be the organization's "seal, logo, or . . . identifying mark."

Even assuming that the organization could get past these hurdles, it could not necessarily describe its stricter standards on the product label itself, where consumers would be most likely to look to determine what "truly natural" meant. The FDA has warned that it might consider labeling statements regarding the absence of genetic engineering to constitute misbranding, which is defined by the Food Drug, and Cosmetic Act as false or misleading labeling.[171] For example, the FDA has said:

> A statement that a food was not bioengineered or does not contain bioengineered ingredients may be misleading if it implies that the labeled food is superior to foods that are not so

organic certifier brought a lawsuit challenging, among other things, this prohibition on conditioning a certifier's identifying logo or mark on compliance with production or handling practices other than those in the federal regulations. Harvey v. Veneman, No. Civ. 02-216-P-H, slip op. at 21–22 (D.Me. Oct. 10, 2003). The plaintiff certifier, who is also an organic farmer, argued that the prohibition prevents competition between private certifiers, harms consumers by not allowing standards which exceed the rules, and prevents the development of standards that keep pace with emerging research and technology. The Secretary responded that the idea of allowing higher production standards by certifying agents was rejected because the Organic Foods Production Act's purpose was to create a consistent national standard. *Id.* at 22. The District Court ruled for the Secretary, finding that the Secretary had not been arbitrary or capricious in making this choice. *Id.* On appeal, the First Circuit Court of Appeals agreed that the Secretary's interpretation of the Act was reasonable. *See* Harvey v. Veneman 396 F.3d 28, 44–45 (1st Cir. 2005). The Court of Appeals struck down, however, a provision in the NOP regulations permitting synthetic substances to be used in organic food processing and a provision on the length of time dairy cows had to be fed solely organic feed before their milk could be sold as organic. *Id.* at 39-40, 43-44. The Court found both of these provisions to be more lenient than the Act allowed.

[171] Federal Food, Drug, and Cosmetic Act (FDCA) § 403(a)(1), 21 U.S.C. § 343(a)(1) (2000).

> labeled. FDA has concluded that the use or absence of use of bioengineering in the production of a food or ingredient does not, in and of itself, mean that there is a material difference in the food. Therefore, a label statement that expresses or implies that a food is superior (e.g., safer or of higher-quality) because it is not bioengineered would be misleading.[172]

The FDA also has said that labeling a food as "GMO free" may be misleading, because "most foods do not contain organisms."[173] Saying that a food is "not genetically modified" would also not be "technically accurate" because most cultivated food crops have been genetically modified through conventional breeding.[174] The FDA says that the more accurate way of conveying such messages would be to say that the product was "not developed using bioengineering."[175] But, again, the FDA warns that such a label must not imply that the product is superior,[176] so a disclaimer about lack of superiority may be required. This requirement, of course, makes such labeling less desirable and would make it harder for a label like "truly natural" to get off the ground.

Aside from these explicit regulatory hurdles, basic inertia also makes it unlikely that a new label will be launched. Now that the NOP regulations exist, it is much easier for organic farmers simply to comply with the regulations' requirements and to benefit from consumers' misperceptions of what organic means than to sign up for a new label's additional requirements. Presumably, a substantial amount of costly advertising also would be necessary in order to educate people about what a new label meant.[177]

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[172] U.S. Food and Drug Admin., *supra* note 39. Just as the FDA has concluded that the use of bioengineering in the production of food does not make a material difference in the food and that labels should therefore not be permitted to suggest that it does, the Canadian Food Inspection Service has concluded that there is no scientific evidence that carbohydrates pose a health risk and so has prohibited food manufacturers from making "low-carb" or "no carb" labeling claims. CBC News Online, *Food Labels: Canada's Rigorous Rules* (Sept. 22, 2004), *at* http://www.cbc.ca/news/background/food/foodlabels.html (last visited Feb. 24, 2005).

[173] U.S. Food and Drug Admin., *supra* note 39.

[174] *Id.*

[175] *Id.*

[176] *Id.*

[177] Until the label was commonly recognized, it also would be hard to charge enough of a price premium to pay for the advertising or the product testing the labeling standards would require. *Cf.* Cathy Greene, U.S. Dep't of Agric.,

Advertising critical of the lenience of the USDA organic label would also surely anger many organic farmers, who might refuse to have anything to do with the new label. For all these reasons, it is not surprising that such a label has not been attempted.

IV. THE ORGANIC REGULATIONS' EFFECT ON PUBLIC DEBATE ABOUT AGRICULTURAL POLICY

The gap between the NOP regulations and consumers' perception of organic food is not only of concern because it may lead consumers to make poor purchasing decisions; it is also of concern because it may distort the political process. By affecting consumers' understanding of their food options and the desirability of those options, the regulations may affect how likely consumers are to advocate for changes in government regulation of food production. Additionally, by creating a situation in which organic farmers benefit from consumers' misperceptions about organic food, the regulations give organic farmers a reason not to publicly complain about other farmers' agricultural practices if those complaints would eliminate consumers' misperceptions.

A. *Effect on Consumers' Political Activity*

Many policy choices go into determining how to regulate pesticide use and genetic engineering. For example, regulators must decide whether to require all new pesticides or genetically engineered crop varieties to go through an approval process before they may be manufactured and grown. If regulators opt for such requirements, they must decide whether safety testing should be required and what level of health risk it is acceptable for a product to pose. Regulators must also decide whether farmers wishing to use pesticides or genetically engineered materials should be required to obtain permits and whether there should be limits on legal uses of those materials. How the government answers these and other questions, and whether once it has answered them it reconsiders its decisions, is of course at least somewhat dependent on public opinion and political activism around these issues.[178]

Organic Labeling, *in* ELISE GOLAN ET AL., AGRIC. ECON. REPORT NO. 793, ECONOMICS OF FOOD LABELING 26 (2000), *available at* http://www.ers.usda.gov/publications/aer793/aer793g.pdf.

[178] *See* STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION 50 (1993) (discussing how public opinion, and particularly public perceptions of risk, affects decisions of Congress and

The fact that many people believe organic food is purer than it actually is means that they believe organic food offers a safe haven, free from the products of genetic engineering and, many people believe, from all pesticide residues.[179] If people believe they can avoid dangers they think are posed by genetic engineering and pesticide residues by buying organic food, this belief removes much of their incentive to engage in political activism around biotechnology and pesticide issues. If they do not believe their health is threatened by government policies, they have much less reason to try to change those policies.

Of course, political opposition to genetically modified crops and to current pesticide policies does exist. In March 2004, voters in Mendocino County, California, approved a ballot measure prohibiting genetically modified crops from being grown in the county.[180] The Vermont Legislature has also passed a law requiring manufacturers of genetically modified seeds to label and register their products with the Vermont Secretary of Agriculture.[181] A number of advocacy organizations also actively seek stricter pesticide regulations.[182] Nevertheless, opposition might be more widespread if people did not view organic food as free of genetically engineered materials and pesticides or if organic food options were less widely available.

Indeed, psychology research indicates that the belief that organic food offers a safe alternative to the perceived risks in the

administrative agencies).

[179] *See supra* notes 120–26 and accompanying text.

[180] Greg Lucas, *Efforts to ban genetically altered crops spreading*, S.F. CHRON., Mar. 30, 2004, at B3. In August, 2004, County Supervisors in Trinity County, California approved an ordinance prohibiting the growing of genetically modified plants and animals in the county. *See* Greg Lucas, *Growing genetically altered foods banned*, S.F. CHRON., Aug. 4, 2004, at B3. Additionally,, activists in Humboldt, Butte, Marin, and San Luis Obispo Counties succeeded in placing similar measures on the November, 2004 ballot. *Id.* Only the Marin County measure passed. *See* Greg Lucas, *Genetically Altered Crops: 2 Counties Rejecting Ban; Not Marin*, S.F. CHRON., Nov. 3, 2004, at B10. It is worth noting, however, that due to a drafting error, the backers of the Humboldt measure urged a "no" vote on the ban. *See* Greg Lucas, *Genetically Altered Crops*, *supra*.

[181] Darren M. Allen, *Vermont Governor Signs Bill Requiring Labeling of GMO Seeds*, RUTLAND HERALD, Apr. 27, 2004.

[182] *See, e.g.*, Pesticide Action Network North America, *About us*, *at* http://www.panna.org/about/about.html (last visited Feb. 25, 2005); Californians for Pesticide Reform, *Mission Statement and Platform*, *at* http://www.pesticidereform.org/article.php?list=type&type=17 (last visited Feb. 25, 2005).

conventional food supply is itself likely to make people more accepting of conventional food. A classic psychometric study by Baruch Fischhoff, Paul Slovic, Sarah Lichtenstein, Steven Read, and Barbara Combs demonstrated that people are more tolerant of risk when they think the risk is a voluntary one.[183] The psychologists asked study participants to evaluate thirty different activities and technologies with regard to a number of factors including: (a) its perceived risk; (b) the acceptability of its current level of risk—whether it should be lower or whether it could be higher, and by how much; and (c) characteristics of the risk, such as whether the risk was voluntary and whether the risk was known to those exposed.[184] The study found that people would tolerate higher voluntary risks than involuntary risks.[185] For example, people thought it was acceptable for hunting and skiing to have high risks, seemingly because they viewed these activities as voluntary and so the inherent risks as voluntarily incurred.[186] Yet they thought only much lower risks would be appropriate when asked about nuclear power and other involuntarily incurred risks.[187] This and other studies[188] have made the concept that people are more willing to accept voluntary than involuntary risks so widely accepted that the Environmental Protection Agency has begun to make risk analysis adjustments for the extent of "voluntariness and controllability" when it promulgates environmental regulations.[189]

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[183] Baruch Fischhoff et al., *How Safe Is Safe Enough? A Psychometric Study of Attitudes Towards Technological Risks and Benefits*, *in* PAUL SLOVIC, THE PERCEPTION OF RISK 83, 94–95 (2000).

[184] *Id.* at 83, 92–93.

[185] *Id.* at 94–95. Cass Sunstein has argued that it would be more accurate to think of this voluntariness and controllability issue as one about how costly it is to control or avoid the risk rather than about the extent to which it is theoretically controllable or avoidable. *See, e.g.*, Cass Sunstein, *Selective Fatalism*, 27 J. LEGAL STUD. 799, 816 (1998); Cass Sunstein, *Which Risks First?*, 1997 U. CHI. LEGAL. F. 101 (1997).

[186] Fischhoff et al., *supra* note 183, at 84, 92–93.

[187] *Id.*

[188] *See, e.g.*, Charles Vlek & Pieter-Jan Stallen, *Rational and Personal Aspects of Risk*, 45 ACTA PSYCHOLOGICA 273, 285–86 (1980) (reporting that empirical studies show that "'voluntariness of exposure' is an important factor in risk acceptance decisions).

[189] *See, e.g.*, National Primary Drinking Water Regulations, 66 Fed. Reg. 6976, 7013–15 (Jan. 22, 2001) (codified at 40 C.F.R. pt. 9, 141, 142) (adjusting the Agency's "sensitivity analysis" of the benefits of reducing arsenic in drinking water to take into account voluntariness and controllability).

If people think they can avoid genetically engineered foods and pesticide residues by buying organic products, they will consider any health risks they believe are posed by genetically engineered foods and pesticides to be voluntary risks. Because people are more accepting of voluntary than involuntary risks, this perception of organic food will likely make people more accepting of the risks they believe are posed by genetically engineered foods and agricultural pesticides. In turn, greater acceptance of these risks will likely further decrease people's incentive to advocate for greater regulation of or prohibitions on genetically engineered foods and agricultural pesticides.

Of course, this effect of defusing political pressure will only occur if people think that eating organic food is an available alternative to conventional and genetically modified foods. This is probably not true of all American consumers, but consumer surveys indicate that by 2001, 67% of American shoppers were using organic products.[190] In addition to 20,000 stores specializing in natural foods across the country, 73% of conventional grocery stores now carry organic products.[191] A consumer survey in November 2002, further indicated that 14% of organic consumers buy organic items at "their local Wal-Mart or Target super center," suggesting that at least some organic foods are available to most American households.[192] Over the last decade, the organic industry has consistently grown at a rate of 20% a year,[193] so these numbers are surely increasing. Although it is not yet everywhere, organic food is widely enough available to have an effect on many people's perception of their food options.

B. *Organic Farmers' Maintenance of Public Impressions About Organic Food*

It might be expected that organic farmers would play a natural watchdog role in the world of agriculture. Since they live and work near conventional farms and can therefore observe modern agricultural practices up close, one might predict that organic farmers would be environmentalists well-positioned to police those practices. If conventional farmers were not careful when using

[190] HEALTHFOCUS, *supra* note 3, at 6.

[191] DIMITRI & GREENE, *supra* note 2, at 1.

[192] *See* Organic Trade Association, *Industry Statistics and Projected Growth*, *at* http://www.ota.com/organic/mt/business.html (last visited Feb. 21, 2005).

[193] Zeichner, *supra* note 1,at 471..

pesticides and so were causing a great deal of drift, or if farmers were spilling genetically engineered seeds in areas where they could contaminate other farms, one might expect that organic farmers would raise a fuss, if not by bringing lawsuits over contamination of their own farms,[194] then at least by criticizing these activities publicly. More generally, one might expect organic farmers to be a vocal political constituency against pesticide use and genetic engineering.

The NOP regulations, however, put organic farmers in an awkward position. The regulations allow organic farmers whose crops have been contaminated by pesticides or genetically engineered materials to nonetheless sell those crops as organic.[195] Organic farmers who refused to knowingly sell contaminated crops, or who paid for expensive testing of their crops to ensure that they did not do so, would be at a competitive disadvantage to organic farmers who merely complied with the NOP regulations' requirements. Moreover, because consumers do not understand that the regulations allow contaminated crops to be sold as organic, and because this lack of understanding increases demand for organic food, organic farmers also have an incentive to maintain consumers' misperceptions about organic food.[196] Therefore, organic farmers have an incentive not to criticize the use of pesticides or genetically engineered crops in any manner that would reveal to consumers that food labeled organic could be contaminated.

Recent public discussions about genetically engineered crops and their tendency to contaminate other crops have demonstrated the tricky public relations dance this situation leads organic producers and their supporters to undertake. As mentioned above,[197] the Union of Concerned Scientist recently issued a report announcing that between fifty and eighty-three percent of the conventional seed supply for major food crops has been contaminated by genetically engineered seed.[198] In other words, it reported that genetically engineered seed has not been successfully contained and that its presence is now pervasive. One implication

[194] For discussion of the way in which the NOP regulations discourage such lawsuits, *see infra* Part V.

[195] *See supra* notes 70–94 and accompanying text.

[196] *See supra* notes 120–26 and accompanying text.

[197] *See supra* notes 117–18 and accompanying text.

[198] MELLON & RISSLER, *supra* note 117, at 2.

of this report is that organic food has probably been contaminated as well, yet the report stops short of saying that. Instead, the report says that "organic farmers are struggling to find uncontaminated seed. If they cannot purchase seed free of transgenically derived sequences or control post-planting outcrossing—neither of which is completely within their control—they will be unable to meet . . . demands for non-engineered food."[199] Only in small print in the middle of a footnote does the report quietly acknowledge that "organic standards do not strictly require a product free of genetic engineering."[200] The acknowledgment of the USDA organic standards is buried—and the inability of organic farmers to supply non-engineered foods is probably described as if it is only a potential problem for the future rather than an actual problem—in an apparent effort to protect the demand for organic food. Indeed, the report outright "recommend[s] that consumers continue to purchase organic foods and support organic agriculture."[201] The report does observe that, "[d]espite their best efforts, some organic producers may occasionally end up with products containing low levels of genetically engineered sequences."[202] But it says that "this is the exception, not the rule."[203] Moreover, the wording suggests that, even if organic producers end up with products containing genetically engineered sequences, those products will not be labeled organic.[204] The conclusion of the report emphasizes that certified organic food "remains the best market-place option by far for consumers who demand uncontaminated products."[205] While this may be true, it is at least somewhat deceptively reassuring. The report, whose purpose is primarily to reveal that biotech crops are contaminating the traditional seed supply and therefore the food that grows from seeds, gives the false overall impression that food will not be certified as organic if it becomes

[199] *Id.* at 44.

[200] *Id.* at 44 n.73.

[201] *Id.* at 55.

[202] *Id.*

[203] *Id.*

[204] Contrary to the acknowledgment in an earlier footnote that organic standards do not require products to be free of genetic engineering, MELLON & RISSLER, *supra* note 117, at 44 n.73, the sentence following the observation that organic producers may suffer genetic contamination of their products says that such genetic contamination puts a farmers' organic certification "in jeopardy." *Id* at 55.

[205] *Id.*

contaminated.

The major newspaper stories reporting on the seed contamination study reinforced this impression. A *New York Times* story quoted Frederick Kirschenmann, founder and former president of Farm Verified Organic, Inc. and director of the Leopold Center for Sustainable Agriculture at Iowa State University,[206] as saying that organic farmers were having an increasingly difficult time obtaining seeds free from genetic engineering and that, if "the current rate of seed contamination continues, then farmers supplying niche markets that do not allow any genetically modified materials will simply lose those markets."[207] This statement certainly implies that the organic market is one of those niche markets. The *Atlanta Journal-Constitution* also quoted Kirschenmann as saying that "[i]t is going to work a tremendous hardship on organic growers who have to assure their customers that their products are transgene-free."[208] Similarly, a *Wall Street Journal* article on the study reported that the results "trouble[d] organic farmers, who bill their goods as free of genetic alterations."[209] These and other news stories would likely lead readers to believe that organic food is required to be free from such contamination and that it *is* free from such contamination. Newspapers probably reported the story in this manner because of the way the Union of Concerned Scientists and organic industry representatives such as Kirschenmann framed the issue when interviewed by reporters—as a challenge for organic farmers that may harm them in the future, but not as one that has already affected their products.

When organic farmers participate in public debates about biotechnology, they are generally similarly careful to describe the threat of contamination of organic food as a problem in the future, rather than a problem that has already occurred, and as a problem that would cause them to lose their organic status. For example, Jim Kusler, a former North Dakota state senator and former North

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[206] *See* Leopold Center for Sustainable Agriculture, *Frederick Kirschenmann Biography*, http://www.leopold.iastate.edu/about/moreaboutfred/fred_bio.htm (last visited Apr. 27, 2005)

[207] Andrew Pollack, *Modified Seeds Found amid Unmodified Crops*, N.Y. TIMES, Feb. 24, 2004, at C6.

[208] Mike Toner, *Genetically Modified DNA Taints 3 Crops*, ATLANTA J.-CONST., Feb. 24, 2004, at A7.

[209] Adamy, *supra* note 110.

Dakota secretary of state, who is an organic farmer, has launched an effort to place a voter referendum on the ballot in North Dakota that would give the state Agriculture Commissioner authority to veto the use of biotech wheat.[210] Kusler was interviewed on National Public Radio to discuss the proposed provision and his reasons for advocating it. In the interview, he said that it would be "a serious economic loss for me if for some reason one of my near or distant neighbors would plant biotech wheat and that wheat in turn would end up cross-pollinating with my organic wheat. By definition, my organic wheat would no longer be organic, and I would lose my customer instantly."[211] It is notable that Kusler phrased his comment this way, because as someone who is presumably very legally sophisticated, he must know that under the USDA regulations, his wheat still could be labeled organic if it cross-pollinated with biotech wheat, as long as the cross-pollination was not intentional. The wheat might not be organic under the popular understanding of what that term means, but it still could be considered organic under the legal definition. It is of course not in Kusler's interest to make this distinction clear to the public.

California Certified Organic Farmers (CCOF) *Magazine*, which is published by CCOF, an organization that provides organic certification and that promotes organic agriculture,[212] has approached the issue of genetic engineering in a similar fashion. *CCOF Magazine* is handed out at conferences and natural product exhibitions nationwide and to consumers at health food stores throughout California, and it is distributed directly to organic processors, retailers, and wholesalers.[213] In the summer of 2003, the magazine devoted an entire issue to the subject of genetic engineering. In it, genetic engineering was described as "completely different from traditional plant breeding."[214] The

[210] *See* Associated Press, *Agricultural Commissioner Could Veto Biotech Wheat*, Feb. 7, 2004, *available at* http://www.agobservatory.org/headlines.cfm?RefID=29187 (last visited Feb. 27, 2005); *Morning Edition*, *supra* note 124.

[211] *Morning Edition*, *supra* note 124.

[212] *See* California Certified Organic Farmers, *About CCOF*, *at* http://www.ccof.org/about.php (last visited Feb. 27, 2005).

[213] *See* California Certified Organic Farmers, *Advertise with CCOF*, *at* http://www.ccof.org/advertise.php (last visited Feb. 27, 2005).

[214] Ellen Hickey & Richard Caplan, *The Brave New World of Genetic Engineering*, CCOF MAGAZINE, Summer 2003, at 5, *available at*

magazine reported that, "[w]ith alarming regularity, biotechnology companies have demonstrated that scientists cannot control where genes are inserted and cannot guarantee the resulting outcomes. Unexpected field results highlight the unpredictability of the science, yet combinations previously unimaginable are being field tested and used commercially."[215] The magazine also described studies that found that genetically engineered plants had hybridized with wild plants in their surrounding area and that the resulting hybrids succeeded in the wild, threatening to drive wild varieties to extinction.[216] The magazine criticized government regulation of genetic engineering in the United States as inadequate,[217] and reported that "there is little credible evidence" to support biotechnology companies' claim that genetically engineered crops generally require less pesticide use.[218] Toward the end of the volume, in an article on alternatives to genetically engineered crops, the magazine said "[w]hen you buy organic, you are not only supporting organic farmers, you're also buying food made without genetically engineered ingredients."[219] Nowhere in the magazine was there any suggestion that food that has been contaminated by genetically engineered materials could be sold with an organic label.

If organic farmers reported that drift was common and admitted publicly that they could no longer guarantee that their products, legally labeled organic pursuant to the NOP regulations, were free of genetically engineered ingredients, this would, first, decrease consumer demand for organic food, and, second, likely have a powerful political effect. It could destroy consumers' sense that they can avoid genetically engineered materials by consuming

http://www.ccof.org/pdf/mag_sum03.pdf (last visited Feb. 27, 2005).

[215] *Id.*

[216] *See* Norman C. Ellstrand, *When Transgenes Wander, Should We Worry?*, CCOF MAGAZINE, Summer 2003, at 8-11, *available at* http://www.ccof.org/magazine/archives/mag_sum03.pdf (last visited Feb. 27, 2005).

[217] Claire Hope Cummings, *Are GMOs Being Regulated or Not?*, CCOF MAGAZINE, Summer 2003, at 12, *available at* http://www.ccof.org/magazine/archives/mag_sum03.pdf (last visited Feb. 27, 2005).

[218] Skip Spitzer, *Genetically Engineered Foods and Pesticides*, CCOF MAGAZINE, Summer 2003, at 14, *available at* http://www.ccof.org/magazine/archives/mag_sum03.pdf (last visited Feb. 27, 2005).

[219] *A Better Way of Doing Things: Alternatives to Genetically Engineered Crops*, CCOF MAGAZINE, Summer 2003, at 23, *available at* http://www.ccof.org/magazine/archives/mag_sum03.pdf (last visited Feb. 27 2005).

organic food—potentially frightening organic consumers and spurring them to advocate for prohibitions on new genetically engineered crop varieties. It might also make consumers who do not buy organic food less tolerant of perceived risks of genetic engineering.[220] As discussed below, the regulatory alternatives that could result from this political mobilization might also be burdensome for organic farmers.[221] Organic producers therefore have a strong incentive not to admit that their products might contain genetically engineered materials.

Nor do companies that produce genetically engineered crop varieties, the other group most likely to be familiar with the nuances of federal law on these issues, have any incentive to tell the public what the organic regulations permit. Although it may seem as if the interests of the organic industry and the biotech food industry would be entirely in opposition to each other, because the availability of organic food likely reduces political opposition to biotech foods, the existence of the organic food industry and the public belief that organic foods are free of biotech products actually benefits the biotech industry.[222] At times, in fact, advocates for the biotech industry have used the organic industry to promote biotechnology. For example, around the same time that the USDA was finalizing the NOP regulations, the USDA and United States trade representatives met with European officials in an effort to avoid conflict over biotech foods.[223] Prior to a round of trade talks between French officials and United States Secretary of Agriculture Dan Glickman and United States special trade negotiator Peter Scher, it was reported that the American negotiators were planning to try to diffuse French opposition to genetic engineering and, presumably, French demands for labeling of foods containing genetically engineered materials, by promoting the new rules for organic food labeling as "ensur[ing] a line of unmodified food for people here or abroad who want to know their food hasn't been genetically changed."[224] The biotech industry certainly does not want to tell consumers that organic food does not actually offer a complete alternative to biotech products.

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[220] *See supra* notes 183–89 and accompanying text.

[221] *See infra* Part VI.

[222] *See supra* notes 178–92 and accompanying text,

[223] *See* Bill Lambrecht, *Europe's Objections to Genetically Modified Foods Mean a New Tack for U.S.*, ST. LOUIS POST DISPATCH, June 27, 1999, at A11.

[224] *Id.*

Conversely, the existence of the genetically engineered food industry benefits the organic industry because people seeking to avoid genetically engineered materials turn to organic food as a safe alternative.[225] Organic producers and marketers cater to those who seek to avoid biotech products by specifically advertising organic food as an alternative to genetically engineered foods.[226] But in order to continue to benefit from consumers' desire to avoid genetically engineered foods, the organic industry must perpetuate the notion that organic food is free of genetic contamination. Members of the organic industry must therefore refrain from making some political statements that they might otherwise make.

V. EFFECTS OF THE ORGANIC RULES' PROCESS FOCUS ON TORT LIABILITY FOR AND THE RESULTANT INCENTIVES TO AVOID DRIFT

The USDA organic rules' focus on process rather than product standards likely has other effects as well. The regulations would probably make it more difficult for an organic farmer whose crop has been contaminated by pesticide or genetic material drift to obtain compensation through a tort action. The regulations also reduce all farmers' incentives to take measures to prevent contamination by drift.

An organic farmer whose crop had been contaminated by drift might attempt to obtain compensation by bringing a tort suit against the party responsible for the drift.[227] In order to succeed in

[225] *See* Konstantinos Giannakas & Amalia Yiannaka, Agricultural Biotechnology and Organic Agriculture: National Organic Standards, Labeling and Second-Generation of GM Products 3, 19 (July 2003) (manuscript prepared for presentation at the American Agricultural Economic Association Annual Meeting, Montréal, Canada, July 2003) (arguing that when products of biotechnology are not required to be labeled as such, the organic sector benefits because consumers think that buying organic food is the only way to avoid products of biotechnology), http://www.umass.edu/resec/pdfs/giannakas.pdf.

[226] *See, e.g.*, Organic Trade Association, *Benefits of Organic* (listing "An Alternative to Genetic Engineering in Agriculture" as a benefit of organic food), *at* http://www.ota.com/organic/benefits.html (last visited Feb. 27, 2005); Cascadian Farm, *Why Go Organic?* (promoting Cascadian Farm organic products by announcing that "the organic food label identifies food grown with practices that don't use genetic engineering"), *at* http://www.cfarm.com/cfarm/organic/default.asp (last visited Feb. 24, 2005).

[227] In addition to the difficulties created by the NOP regulations that are discussed in the main text, an organic farmer bringing a tort suit to recover for drift would face obstacles presented by the elements of the potential tort itself. For example, if the suit were based on a theory of negligence, the plaintiff would

such a suit, however, the organic farmer would have to prove that the defendant had caused her to suffer damages.[228] The way the NOP regulations are written makes it difficult or impossible to do

have to prove that the defendant had a duty (usually, a duty to exercise reasonable care under the circumstances), that the defendant breached that duty, that the plaintiff suffered damages, and that the defendant's breach was the actual and proximate cause of those damages. *See* Grossman, *supra* note 144, at 236. Yet because pesticide and genetically engineered pollen drift could occur even when a farmer applying the pesticide or planting genetically engineered seed exercised reasonable care, organic farmers whose crops were contaminated by drift might not always be able to demonstrate a breach of the duty of reasonable care. Even when lack of care could be demonstrated, it might also be difficult to prove actual causation if other farmers in the area were using the same pesticides or planting the same varieties of genetically engineered seed that contaminated the plaintiff's crop, because it may be hard to rule out the possibility that the contamination came from the other farmers' activities. *Id.* at 237.

If a plaintiff tried to base her claim on a strict liability theory, she would need to prove that the defendant's activity was abnormally dangerous. RESTATEMENT (SECOND) OF TORTS §§ 519-524 (1977). It would be hard to prove this with regard to the use of genetically engineered crops given that the FDA and the USDA take the position that such crops are safe. And most courts have refused to apply a strict liability theory in cases of pesticide drift, instead insisting that plaintiffs prove negligence. *See* Grossman, *supra* note 144, at 237–38; Robert F. Blomquist, *Applying Pesticides: Toward Reconceptualizing Liability to Neighbors for Crop, Livestock and Personal Damages from Agricultural Chemical Drift*, 48 OKLA. L. REV. 393, 409 (1995); *see also, e.g.*, Bennet v. Larsen Co., 348 N.W.2d 540, 553 (Wis. 1984). Moreover, even if a plaintiff could prove the defendant's activity was abnormally dangerous, there is no strict liability if "the harm would not have resulted but for the abnormally sensitive character of the plaintiff's activity." RESTATEMENT (SECOND) OF TORTS § 524A (1977). It might be difficult to convince a court in an area dominated by conventional agriculture that organic farming was not an abnormally sensitive activity.

Similarly, To establish a private nuisance claim, a plaintiff would need to show that the defendant unreasonably interfered with the plaintiff's use or enjoyment of land, *see* RESTATEMENT (SECOND) OF TORTS § 821D (1979), and that the kind of harm suffered by the plaintiff "would be suffered by a normal person in the community or by property in normal condition and used for a normal purpose." *Id.* § 821F. Even if organic farmers could prove that the defendant's actions were unreasonable, they would be unable to prevail on a nuisance theory if organic farmers were considered hypersensitive or not "normal."

Finally, because trespass requires an intentional invasion of property, *see* RESTATEMENT (SECOND) OF TORTS § 158 (1977), and because drift is unlikely to be intentional, recovery under a trespass claim is also highly unlikely.

[228] *E.g.*, Motorola, Inc. v. Associated Indem. Corp., 878 So.2d 824, 830–31 (La. Ct. App. 2004) ("a common, indispensable element in all tort cases is that of damages"); Traina Enterprises, Inc. v. RaceTrac Petroleum, Inc., 525 S.E.2d 712, 713 (Ga. Ct. App. 1999) (listing damages as an element of any tort action).

so.[229] Because the NOP rules do not forbid putting an organic label on foods that have been contaminated unintentionally by genetically engineered materials, an organic farmer whose crop was contaminated by genetically engineered materials would not be able to show that he suffered any damages. The GMO-contaminated crop could still be sold as organic, earning the price premium that comes along with the organic label. In the case of contamination by pesticide drift, only if the crop was residue tested and the residues exceeded 5% of the EPA tolerance for the pesticide in question could damages be proven,[230] because only then would sale as organic be prohibited.[231]

The USDA appears to have believed that one advantage of the process-based approach taken in the NOP regulations was precisely that food unintentionally contaminated by drift could still be sold as organic. The USDA had received comments in response to its proposed rules that raised concerns about contamination from drift and suggested that the regulations provide citizens with a right to sue in cases of drift. In the Federal Register announcement of the final rules, the agency responded:

> When we are considering drift issues, it is particularly important to remember that organic standards are process based. Certifying agents attest to the ability of organic operations to follow a set of production standards and practices that meet the requirements of the Act and the regulations. This regulation prohibits the use of excluded methods in organic operations. The presence of a detectable residue of a product of excluded methods alone does not necessarily constitute a violation of this regulation. As long as an organic operation has not used excluded methods and takes reasonable steps to avoid contact with the products of excluded methods as detailed in their approved organic system plan, the unintentional presence

[229] Of course, because the organic rules do not require any product testing, contamination may never be discovered in the first place. *See supra* notes 70–78 and accompanying text.

[230] According to the Consumers Union, this is unlikely because "a significant portion of the pesticide residues found on conventional food grown in the United States are at levels below 5 percent of the published EPA tolerance level." Letter from Jean Halloran, Director, Consumer Policy Institute to Eileen S. Stommes, Deputy Administrator, Agricultural Marketing Service, USDA (Apr. 10, 1998), http://www.consumersunion.org/food/orgny798.htm (Apr. 10, 1998).(Comments from Consumers Union on Docket No. TMD-94-00-2, National Organic Program, 62 Fed. Reg. 65,890 (1997)).

[231] 7 C.F.R. § 205.671.

> of the products of excluded methods should not affect the status of an organic product or operation.[232]

The USDA seems to have been suggesting that because organic farmers could still sell their crops as organic even if they were contaminated by drift, they would have no need to sue those who caused the drift.[233]

The way in which the NOP regulations are written also affects conventional farmers' incentives to minimize contamination of organic crops by drift. Even with the most careful practices, it is impossible for farmers using pesticides and certain genetically engineered crops to completely prevent drift.[234] But measures can be taken to minimize drift. With regard to pesticides, farmers can stop spraying pesticides before the edge of the target field and can avoid spraying when it is windy.[235] Farmers can also make use of technologies such as air-assisted sprayers, variable-rate nozzles, and chemical additives that change spray characteristics, all of which have been developed to reduce pesticide drift.[236] To reduce the likelihood that pollen from their genetically engineered crops will fertilize other crops, farmers can time their planting dates so that their crops do not pollinate at the same time as their neighbors' crops and can plant traditional crops in buffer zones around their genetically engineered crops.[237]

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[232] 65 Fed. Reg. 80,547, 80,556 (Dec. 21, 2000) (codified at 7 C.F.R. pt. 205). The USDA also said that because the Organic Foods Production Act did not provide for the right to bring suit as a federal cause of action, the USDA did not have the authority to create a federal cause of action. *Id.*

[233] The fact that, under the NOP regulations, organic farmers are unlikely to succeed in tort suits for crop contamination means that organic farmers are unlikely to bring such suits. The resulting dearth of lawsuits may contribute to the low media profile of the issue of drift contaminating organic crops and the general lack of public awareness on the issue.

[234] *See* NATIONAL RESEARCH COUNCIL, *supra* note 115, at 1, 12 (concluding that none of the methods of biological confinement currently in existence or in development will likely be completely effective in preventing genetically engineered crops from passing their genes to other unintended target organisms); Kanna v. Benton County, No. 17270-8-III, 1999 WL 219783, at *8 (Wash. Ct. App. Apr. 15, 1999) (finding that pesticides migrate even when applied with the "utmost care."). As noted earlier, *see supra* note 111, there is little risk of drift of genetically engineered pollen from self-pollinating species fertilizing other crops unintentionally.

[235] Andrew P. Morriss & Roger E. Meiners, *Market Principles for Pesticides*, 28 WM. & MARY ENVTL. L. & POL'Y REV. 35, 82–83 (2003).

[236] *Id.* at 80.

[237] *See* James A. Riddle, *10 Strategies to Minimize Risks of GMO*

Similarly, organic farmers can take measures to reduce the likelihood that their crops will be contaminated by drift. To avoid both pesticide and genetically altered pollen drift, organic farmers can try to grow their crops on fields far away from any non-organic farms, or fields isolated from wind and pollinators by physical barriers.[238] Organic farmers can also try to obtain their seeds from organic seed providers who have taken such biotech-contamination-prevention measures and who have tested their seeds for contamination.[239] In addition, organic farmers can avoid sharing farm equipment, crop storage facilities, or transportation vessels with conventional farmers,[240] and can attempt to time their planting dates to prevent pollination periods from coinciding with those of neighboring conventional farms.[241]

The NOP rules create little incentive for farmers to put much effort into such contamination prevention measures.[242] Because, for the reasons discussed above, the rules make it very unlikely that organic farmers could recover in tort for contamination of their crops, conventional farmers do not need to worry about financial liability for drift. Organic farmers can sell their crops as organic even if the crops become contaminated, so contamination does not pose a financial risk for them either. Some organic farmers might nevertheless take all measures possible to prevent contamination because they believe they should or because they

Contamination 1, *at* http://www.sustainablefarmingcentralmn.com/strategies.pdf (last visited Feb. 23, 2005).

[238] *Id.*

[239] *See id.*

[240] *Id. See also* MCHUGHEN, *supra* note 39, at 79, 166 (explaining that genetically engineered DNA is frequently spread when seeds become trapped within farm machinery and the machines either blend the genetically engineered seeds with the next load of grain or drop them in the next field, when seed bags are mislabeled, or when seeds spill when farmers are loading seeding equipment).

[241] *See* Riddle, *supra* note 237, at 1.

[242] The NOP regulations do require that the field on which crops intended to be sold as organic are grown have "distinct, defined boundaries and buffer zones such as runoff diversions to prevent the unintended application of a prohibited substance to the crop or contact with a prohibited substance applied to adjoining land that is not under organic management." 7 C.F.R. § 205.202(c). And they require that the organic system plan describe the measures that the producer or processor will take to "prevent contact of organic production and handling operations and products with prohibited substances." *Id.* § 205.201(a)(5). The farmer could comply with these requirements, however, without utilizing nearly all of the potential means of minimizing contamination.

have a particular customer who demands it,[243] but the regulations do not require them to do so. The lack of incentives to put much effort into avoiding contamination from drift increases the likelihood that contamination will occur, further widening the gap between consumers' expectations for organic products and organic products' actual characteristics.

VI. POSSIBLE ALTERNATIVE REGULATORY APPROACHES

If consumers do not get what they think they are paying for when they buy organic food and if misperceptions of organic food affect political deliberation on issues of agricultural policy, it is because consumers think organic means more than the USDA has defined it to mean.[244] Preventing these phenomena would therefore involve bringing the regulatory definition of organic into conformance with the public understanding of "organic." This could be done either by defining organic differently in the regulations or by changing public perception about what it means for food to be organic.

One way to change the regulatory definition of organic would be to add product standards to the existing process standards.[245] Because most consumers believe that organic food is free of all pesticides, chemicals, and genetically engineered materials, the regulations could require that organic foods contain no detectable levels of any of these substances. Organic certifiers or government regulators could be required to conduct periodic, unannounced product testing of crops, meat, dairy, and processed foods to enforce these product standards.

At the time that Congress was considering the Organic Foods Production Act, an alternative bill that took essentially this

[243] For example, Warburton's Bakery in England only buys wheat from farmers who agree to abide by strict quality assurance standards and to only grow specific strains of wheat. Centre for the Study of Co-Operatives, *Networking for Success: Strategic Alliances in the New Agriculture*, *at* http://coop-studies.usask.ca/Newsevents/workshops/strategicalliance/strategic/who2.html (last visited Feb. 24, 2005).

[244] *See supra* Part III.

[245] It would be important to keep the process standards and not just rely on product standards because not all of the processes integral to organic production, such as maintaining soil fertility, affect the product in a manner that could be enforced through a product standard. In addition, some synthetic pesticides degrade before harvest and do not leave residues, so a residue standard alone would not prevent farmers from using such pesticides. *See* American Crop Protection Association, *supra* note 166.

product-based approach was introduced in the House of Representatives. The bill, which would have created a law called the Organic Foods National Standards Act of 1990, required "periodic residue testing by the certifying agent of agricultural products that have been produced on organically certified farms and handled through organically certified handling operations to determine whether such products contain any pesticide or other nonorganic residue or natural toxicants."[246] If this residue testing discovered any detectable pesticide or other nonorganic residue, the product could not have been labeled as organically produced.[247] The bill also included stricter process standards than the current NOP regulations. For example, it required that to be labeled organic, food could not "have been produced on soil or in any growing medium that [was] determined by the certifying agent (after appropriate soil testing) to contain chemical residue."[248] To even further guarantee that organic food would be free from any unintentional contamination, the bill also would have prohibited organic farmers from irrigating crops or from giving drinking water to livestock unless the water had been analyzed for quality, salinity, and purity, and approved by the certifying agent.[249]

Admittedly, creating reasonable rules to enforce strict product standards would be difficult, and I can only begin to gesture at what such rules might look like. Cost would necessarily limit how often residue and DNA testing could be conducted,[250] so it would be important to carefully plan when and where tests should occur. Ideally, testing would be more frequent in geographic areas where prohibited substances had been detected in the past, but it would be important to test other areas frequently enough to make the threat of enforcement realistic. Testing for genetic contamination could focus on crops in which contamination is most likely—for example, those with wind-disbursed pollen. Testing self-fertilizing

[246] H.R 5045, 101st Cong. § 104(a)(6) (1990). The bill was introduced by Representatives Condit, Bates, Owens, Pelosi, Dixon, Torres, and Meyers. H.R 5045, 101st Cong. (1990).

[247] *Id.* § 118(c)(2).

[248] *Id.* § 110(e).

[249] *Id.* § 112(b), § 114(e).

[250] Tests for genetically engineered materials can cost $250 each. Telephone Interview with John Radin, National Program Leader, Agriculrural Research Service, USDA Plant Physiology Department (Feb. 29, 2004). Tests for pesticide residues can cost up to $400. Telephone Interview with Ray Green, Organic Program Manager, California Organic Program (May 13, 2004).

crops for genetic contamination generally would be unnecessary,[251] and it would be relatively unimportant to test crops such as citrus trees that are typically propagated through grafting, not through growing fertilized seeds.[252]

When a test came out positive under a protocol regulating production standards, the consequences would have to be severe enough to give organic producers an incentive to do everything possible to avoid contamination of their products. The consequences would at least have to include prohibiting all foods that had a high probability of being contaminated from being labeled organic.[253] Difficult choices would have to be made about how high the probability of contamination would have to be to disqualify a product, and methods would have to be developed for determining contamination probabilities. In the case of pesticide contamination on a farm, the rule would probably be that all crops within a certain distance of the plant or plants that tested positive would be considered contaminated, based on how far wind or irrigation runoff might have spread the pesticide. In the case of contamination by bioengineered substances on a farm, the rule might be that all crops of the same or related species as the plant or plants that tested positive would be considered contaminated,

[251] *See supra* note 111.

[252] *See* Shimshon Ben-Yehoshua et al., *Citrus Fruits*, *in* ENCYCLOPEDIA OF AGRICULTURAL SCIENCE VOL. 1, at 357, 359 (Charles J. Arntzen ed., 1994) ("Since the 19th century, citrus trees, like most other fruit crops, have been grown as vegetatively propagated clones grafted onto soil and disease-adapted rootstocks."). If, for example, a non-genetically engineered orange tree were fertilized by pollen from a genetically engineered orange tree, only the seeds in the oranges would contain the genetically engineered DNA. *See supra* note 111. Because people generally do not eat orange seeds, such fertilization would not be of great concern. It would also generally be unnecessary to test crops that propagate asexually, such as potatoes and Jerusalem artichokes. *See* David W. Burger, *Plant Propagation*, *in* ENCYCLOPEDIA OF AGRICULTURAL SCIENCE VOL. 3, at 347, 351 (Charles J. Arntzen ed., 1994) (listing crops that propagate asexually).

[253] If H.R. 5045 had been enacted, it would have provided for penalties up to $100,000 and imprisonment of up to 5 years for misusing an organic label. H.R 5045, 101st Cong. § 120(a) (1990). Producers who violated the law would have been ineligible to receive certification for any farm or handling operation for five years. *Id.* § 120(c). Certifying agents who falsely or negligently certified a farming or handling operation that did not meet the legal requirements would have lost accreditation and would have been ineligible to be reaccredited for at least three years. *Id.* § 120(e). The bill also would have provided for citizen suits to enforce its requirements, *id.* § 121, and would have allowed victorious parties to recover their attorneys fees. *Id.* § 121(e).

given that they are the ones that could have cross-bred with the plant(s) found to be contaminated. For example if an organic farmer's canola plants tested positive for biotech contamination, all of her canola within a certain area might be considered contaminated, but it would probably not be necessary to consider nearby organic asparagus contaminated, since neither seeds nor pollen from bioengineered canola could cause asparagus to grow.

Rules would also have to be developed for processed food. Perhaps, if one item from a production batch tested positive, the entire batch would be considered contaminated. Further difficult choices would have to be made about how to treat other batches made from ingredients from the same or some of the same sources. Consequences of a positive test could also include suspension of a producer or processor's organic certification until further testing of similar products yielded a negative result.

In addition to bringing the regulatory definition of organic closer to consumers' expectations, such changes would enable organic farmers to prove damages in a tort suit when their crops were contaminated by drift,[254] and they would give organic farmers and their neighbors a greater incentive to take all possible measures to avoid drift. One disadvantage of such an approach, however, would be that organic farmers whose crops became contaminated through no fault of their own could suffer severe consequences. Even if the law allowed organic farmers to recover profits lost when their crops could not be sold as organic from whoever caused the contamination, the legal and psychological costs associated with fighting for such a recovery could be large. Seeking recovery would also take time—time a busy farmer might not have. Indeed, the risk of losing the ability to label one's product organic through no fault of one's own, and the cost and hassle that would be involved in recovering some or all of the lost profits, could potentially discourage some farmers from engaging in organic farming in the first place.

If the USDA wanted to adopt such product standards with regard to the presence of genetically engineered materials, it could do so under the Organic Foods Production Act. The Act's provisions on product testing require that "a system of residue testing" be implemented.[255] The Act further provides that if

[254] *See supra* Part V.

[255] 7 U.S.C. § 6511(a).

> an agricultural product sold or labeled as organically produced under this chapter contains any detectable pesticide or other non-organic residue or prohibited natural substance the Secretary, the applicable governing State official, or the certifying agent shall conduct an investigation to determine if the organic certification program has been violated, and may require the producer or handler of such product to prove that any prohibited substance was not applied to such product.[256]

The product "shall not be sold or labeled as organically produced" if the investigation indicates that the residue is "(A) the result of intentional application of a prohibited substance; or (B) present at levels that are greater than unavoidable residual environmental contamination."[257] The most likely interpretation of these provisions is that they do not directly address testing for the products of genetic engineering. Genetically engineered genes are not pesticides, nor are they easily characterized as "non-organic residue[s]" (because they become integral parts of the engineered crop) or as "prohibited natural substance[s]" (because they are not natural). Under this interpretation, because the Act is silent with regard to testing for genetically engineered materials, the USDA should be free to fill in this gap in the statute by promulgating reasonable regulations addressing the subject.[258]

An amendment to the Organic Foods Production Act might be required in order for product standards prohibiting all pesticides to be adopted, however. The most likely interpretation of the statutory provision that a product "shall not be sold or labeled as organically produced" if the investigation of a positive residue test indicates that the residue is "(A) the result of intentional application of a prohibited substance; or (B) present at levels that are greater than unavoidable residual environmental contamination"[259] is that it both enforces process standards and establishes a product standard limiting pesticide residue levels to

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[256] *Id*. § 6511(c)(1).

[257] *Id*. § 6511(c)(2).

[258] *See* Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 843–844 (1984) ("If Congress has explicitly left a gap for the agency to fill, there is an express delegation of authority to the agency to elucidate a specific provision of the statute by regulation. Such legislative regulations are given controlling weight unless they are arbitrary, capricious, or manifestly contrary to the statute.").

[259] 7 U.S.C. § 6511(c)(2).

"unavoidable residual environmental contamination."[260] "Unavoidable residual environmental contamination" probably should be interpreted as referring to lingering contamination from pesticides such as DDT that were used in the past and that continue to persist in the environment.[261] On this reading of the Act, it would be permissible to adopt product standards to prohibit all pesticide residues resulting from recent drift, but impermissible to prohibit residues of pesticides that were no longer in use but that persisted in the soil in the area where the crop was grown. An amendment to the Act would therefore be required before regulations could establish a zero pesticide residue product standard.[262] One could argue, however, that, read literally, the Act only prohibits labeling food organic when residues in the food are greater than unavoidable residual environmental contamination.[263] The Act does not have explicit instructions about what should happen when residues are a result of unavoidable environmental contamination. One could therefore argue that the statute leaves a gap that the USDA could fill in by adopting a zero residue standard.[264]

Another possible product standard approach would be to place greater limits on what types of foods may be labeled organic. When pollen, genetically engineered or otherwise, drifts, it can generally only pollinate plants of the same or related varieties.[265] It is therefore the crops related to existing genetically engineered crops that are most likely to be unintentionally contaminated by

[260] *Id*. For discussion of the congressional intent behind these provisions, *see supra* text accompanying notes 68–69.

[261] The Senate Report on the Act provides support for this interpretation. *See* S. REP. NO. 101-357, at 300 (1990), *reprinted in* 1990 U.S.C.C.A.N. 4656, 4954 (providing as its only example of "unavoidable residual environmental contamination" the fact that "some older pesticides may remain in the soil for years and show up in minute quantities of little concern to human health and the environment"); *see also* Baker et al., *supra* note 100, at 432 (reporting that persistent organochlorine pesticides that have now been banned (such as DDT) accounted for 40% of the pesticide residues detected in organic produce).

[262] A zero residue standard likely would have the effect of prohibiting at least some organic crops from being grown in areas with high levels contamination by DDT or other organochlorine pesticides. Root crops such as carrots and potatoes, cucurbits such as squashes and cucumbers, and some leafy greens, such as spinach, absorb organochlorine residues from contaminated soil more readily than other crops. Baker et al., *supra* note 100, at 431.

[263] 7 U.S.C. § 6511(c)(2).

[264] *See supra* text accompanying note 258.

[265] *See* Knudson et al., *supra* note 95, at A1.

the products of genetic engineering. In the perhaps not too distant future, all pollinated crops for which there are genetically engineered varieties or even related varieties in production may have some level of genetically modified content because of pollen drift, seed mixing, and crop mixing in the distribution chain.[266] Under such circumstances, another way to change the regulations would be to prohibit organic labeling altogether for any such crop and any processed food containing those crops as ingredients. Essentially, such a rule would admit that genetically engineered crops cannot coexist with organic crops of the same varieties, at least under the common understanding of what organic means. If this change were made, fewer organic foods would be available.[267] But at least with regard to genetic engineering, the organic food that did exist would meet consumers' expectations. Consumers would also come to have a more accurate understanding of the extent to which organic food offers a safe haven from genetically engineered foods. Those concerned about genetically engineered foods might do more to try to prevent new genetically engineered crop of varieties from being introduced.

The other general strategy for aligning consumer perceptions of organic with the regulatory definition of organic would be to attempt to correct consumer perceptions instead of attempting to change organic products. This could involve requiring further labeling. For example, all organic labels could be required to contain a disclaimer such as: "That this product is organic does not guarantee that it is GMO or pesticide free," or "May contain

[266] A recent British study of organic foods and health foods containing soy, for example, found that 10 of the 25 foods sampled contained genetically engineered soy. Mark Partridge & Denis J. Murphy, *Detection of Genetically Modified Soya in a Range of Organic and Health Food Products: Implications for the Accurate Labelling of Foodstuffs Derived from Potential GM Crops*, 106 BRITISH FOOD J. 166, 172 (2004). Eight of those 10 were labeled either "organic" or "GM free." *Id.* at 172-74. The biologists who conducted the study concluded that "it may soon be difficult or even impossible to guarantee 100% GM-free status in any soya product." *Id.* at 178. Approximately 60% of the processed food inventory of a typical supermarket contains material from soy. *Id* at 167.

[267] Indeed, many processed food products would need to be reformulated to be eligible for organic status. *See id.* at 167 ("it is estimated that as much as 60 per cent of the processed food inventory of a typical supermarket contains material from soya"); *Id.* at 178 ("it may soon be difficult or even impossible to guarantee 100 per cent GM-free status in any soya product").

genetically engineered ingredients or traces of pesticides."[268] Either additionally or alternatively, a consumer education campaign could be undertaken to explain more fully what the organic label means. Eventually, such an approach would probably change consumers' perception of organic food, eliminating any distorting effect on the political process that results from current public misconceptions about organic food. It would not change the incentives farmers have to prevent drift, nor would it improve organic farmers' ability to recover in tort for crop contamination, but instead would accept drift as inevitable and announce this acceptance. Demand for organic food would surely drop once consumers understood what the label actually meant, but given that the drop would reflect the elimination of consumer misunderstandings, it would be hard to argue that such a drop would be unjustified. This general strategy is possibly the most promising because it would be the easiest to implement.

VII. CONCLUSION

Information about consumer products both informs people's purchasing decisions and affects people's views about whether government regulation of the industries providing those products is adequate. As the Supreme Court stated when it first announced that commercial speech would receive First Amendment protection:

> So long as we preserve a predominantly free enterprise economy, the allocation of our resources in large measure will be made through numerous private economic decisions. It is a matter of public interest that those decisions, in the aggregate, be intelligent and well informed. To this end, the freeflow of commercial information is indispensable (citations omitted). And if it is indispensable to the proper allocation of resources in a free enterprise system, it is also indispensable to the formation of intelligent opinions as to how that system ought to be regulated or altered.[269]

Both of these indispensable functions are undermined when consumers misunderstand the commercial information they receive. Consumers' confusion over the meaning of the organic

[268] *See id.* at 178 (suggesting that all products containing imported soy be labeled with the warning "may contain GM ingredients").

[269] Virginia Bd. of Pharmacy v. Virginia Citizens Consumer Council, Inc., 425 U.S. 748, 765 (1976).

label leads many consumers to allocate more resources to buying organic food than they might otherwise. And for many organic consumers, the price premium demanded for organic products could make a significant budgetary difference. The sacrifice many consumers make to buy organic food is substantial.[270]

Commercial information also contributes to consumers' opinions about government regulation. Incorrect information about whether organic products offer a safe haven from pesticides and genetically engineered foods affects how likely citizens are to be dissatisfied with current regulation of pesticides and biotechnology and to advocate for changes in those policies. Whether this ultimately means that public health will be inadequately protected largely depends on whether the scientific assumptions and risk assessments that have led to the current regulatory decisions are accurate. We will not know that for decades—until there are people who have lived their whole lives eating foods grown with modern pesticides and the use of genetic engineering, and until epidemiological research on those people is conducted. In the meantime, though, if the NOP regulations lull citizens into complacency, an important democratic check on the regulatory process, a check that might cause current scientific assumptions to be reassessed, may be diminished.

[270] Despite the stereotype that organic consumers are generally affluent, a study conducted by Hartman Group in 1999 found that 31% of "heavy" organic buyers, defined as consumers who bought at least 28 organic items a week, had less than $15,000 in annual household income, and that 52% of heavy organic buyers made less than $30,000 per year. Whelan, *supra* note 4.