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Editors’ Introduction

“What is food to one man may be fierce poison to others.”

-Lucretius

Society’s interest in food ranges across many human concerns—from basic sustenance, health, and safety, to culture, customs and entertainment. Food and agriculture form a global economic engine, represented in the policy arena by powerhouse interest groups and grassroots organizations.

There is no denying the prevalence of food culture in America or the enormous impact of food law and policy. The airwaves are awash with new findings concerning the growing obesity epidemic. More varied and exotic cuisines increasingly become available in America’s supermarkets and restaurants by the day. The rise in the popularity of locally-grown and organic foods (and the struggle to define what it means to be green), combined with an alarming number of pathogenic food scares such as mad cow disease in the 1990s and E. coli-laden vegetables more recently, have shown the intricacies of how food makes its way from the farm to the dinner table.

These competing and complex food concerns generate significant challenges for the legal system, and the role of legislatures, regulators, and courts in this field is evolving rapidly. That is why the Northeastern University Law Journal chose to take on the topic of food law in the current edition of the Journal and in our Spring 2011 Symposium: From Seed to Stomach. The Symposium welcomed distinguished panels of attorneys, policy-makers, and legal scholars who discussed topics ranging from the intellectual property, ethical, and health issues surrounding the patenting of seeds, farming methods, and live animals, to issues concerning the labeling and marketing of food and organic certification, to the future of food safety legislation and obesity litigation, to the social implications of food policies.

This edition opens with a thought-provoking article co-authored by Keith Aoki, John Shuford, Esmeralda Soria and Emilio Camacho. In it, the authors propose proactive intervention to end forces within U.S. policy and intellectual property regimes that put economic pressure on small family farms in Mexico and create demand for low-cost labor in the U.S. Sadly, Professor Aoki passed away on April 26, 2011, just months
after his participation in the Journal’s annual symposium. The Journal is proud to dedicate this edition of the Journal to Professor Aoki.

The next article, by A. Bryan Endres, surveys the legal landscape for genetically-engineered crops, identifies the legal precedent for a private law remedy available to farmers whose crops have been contaminated by genetically-engineered material, and suggests revision to the hands-off approach currently utilized by U.S. regulatory bodies to staunch the perceived need for increased private litigation.

Looking at the regulatory environment from another angle, Baylen J. Linnekin’s article cites numerous examples where food overregulation has made the U.S. population less safe, and advocates for a narrowing of the FDA’s mission to the “old” public health model.

The next article, coauthored by Linda MacDonald Glenn and Lisa D’Agonstino, anticipates what the authors believe is the next food trend—the incorporation of nanotechnology. The article explains how such advances could provide significant benefits for food production such as targeted nutrition, lab-grown meat, or food packaging that reports spoilage as well as the hurdles facing regulatory bodies in light of these new technologies.

Robert J. L. Moore contributes an article that focuses on the problems of childhood obesity vis-à-vis children’s susceptibility to television advertising. The proposal crafts a solution that would allow parents to utilize existing technology to selectively block advertisements.

Returning to the topic of genetically-engineered crops, an article by Colin A. Carter and Guillaume P. Gruère details missteps of the farming industry in the introduction of genetically-modified crops. It explains how genetically-modified material can contaminate certain U.S. crops and advocates a stewardship role for the U.S. government in developing a regulatory framework.

In addition to the above articles, the Journal is pleased to welcome three student pieces: two notes authored by current Northeastern University School of Law students and one comment by a recent graduate.

Kenneth R.L. Parker contributes a note exploring the implications and practicability of applying a federal public trust doctrine to promote increased food production from U.S. oceans. Shelly Baron addresses the food policy and preemption issues raised by the National Meat Association case in her comment. Finally, Veronica Louie contributes the
closing piece, a note addressing the recent effort by the corn industry to avoid negative associations with the high-fructose corn syrup in today’s nutrition-conscious culture.

We would like to thank everyone who contributed, both during the Symposium and in these pages, to the Journal’s treatment of food law and policy. We are very grateful to our staff members and faculty advisors, Professors Michael Meltsner, David Phillips, and Sonia Rolland, as well as the Northeastern University School of Law administration, faculty, and staff, for their support and guidance. The Journal’s mission is to provide a forum to promote discussion and debate. We are confident that the selections in this edition not only demonstrate the complexity of the legal and non-legal issues surrounding food law and policy, but also illustrate the tensions among independent farmers, big agricultural companies, consumers and lawmakers. As the law adapts to the changing food and agricultural landscape, these tensions can be expected to remain in the forefront of public policy and concern.

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Editorial Board
Spring 2012
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IV. Concluding Remarks: Reimagining the Feedback Loop through Progressive Intervention and Interruption

* Professor, King Hall School of Law, University of California at Davis. My deepest thanks go to Dean Kevin R. Johnson, and to my colleagues who have contributed so much to my thinking on these issues. I am especially grateful to Professors Raquel Aldana, Steven W. Bender, Jennifer Chacon, Anupam Chander, Margaret Chon, Devan Desai, Ibrahim Gassama, Shubha Ghosh, Bill Ong Hing, Michael Olivas, Hari Osofsky, Madhavi Sunder, and Peter Yu. I also wish to acknowledge my deep intellectual debt to the work of Professors Stephen Brush, Cary Fowler, Laurence Helfer, Jack Kloppenburg, and Pat Mooney. Their respective contributions in this area have played crucial roles in forming my thinking in this area. I am also especially appreciative to Emilio Camacho and Esmeralda Soria for their outstanding research and editorial work over the past year and their work on the present article. Thanks are also due to the organizers of the “From Seed to Stomach: Food and Agricultural Law” symposium held at Northeastern University School of Law. In particular, thanks to Kara Swanson, who moderated the panel, and to the symposium
organizers, the IT staff which facilitated my presentation by Skype, and the editorial staff at the Northeastern University Law Journal. Finally, I dedicate this article to my loving spouse, Mona, and our daughters Rachel and Sarah. All mistakes are the authors' own.

** Director, Gonzaga University Institute for Hate Studies; Lecturer, Gonzaga University Department of Philosophy; Adjunct Professor, Gonzaga University School of Law. Thanks to my partner, Alexandra, for her keen editorial and intellectual contribution here. I am forever grateful to the late Professor Keith Aoki, who passed away on April 26, 2011. I am a better person for having opportunities to learn from and work with Keith as his student, mentee, colleague, co-author, and friend for more than a decade. I am also grateful to Keith’s colleagues and students at the University of California at Davis, and his many colleagues and friends elsewhere, especially Professors Steven W. Bender and Ibrahim Gassama, who form a vibrant, caring intellectual and professional community committed to extending Keith’s thought and advancing his unique contributions. Finally, I wish to thank my co-authors Esmeralda Soria and Emilio Camacho, Keith’s colleague Professor Anupam Chander, SaeRom Konecky at Gonzaga University School of Law, and the editorial staff at the Northeastern University Law Journal (particularly Ralph Gillis), all of whom helped to bring this article to completion.

*** Sustainable Communities Project Director, California Rural Legal Assistance Foundation. I want to thank the late Professor Keith Aoki for his mentorship and opportunity to work as his research assistant during my time at King Hall School of Law. Professor Aoki was an amazing scholar, artist, professor, mentor, and friend. He inspired me to challenge myself, reaffirmed my sense of social responsibility, and taught me how to make sushi. I will be forever grateful for his support and the guidance he gave me to grow as an attorney and future scholar. He is truly missed. I am grateful to John Shuford for giving me the honor to complete Keith Aoki’s last scholarly work and to join them as a co-author. Lastly, I want to thank my family for motivating and supporting me through my law school career. I would not be on my way to becoming an attorney without them.

**** University of California at Davis, B.A. 2008; University of California at Davis, King Hall School of Law, J.D. 2011. I wish to sincerely thank John Shuford and Esmeralda Soria for their invaluable support, comments, and criticisms. Additionally, I wish to express my eternal gratitude to Keith Aoki who opened up a wonderful world I never knew existed with his expertise, mentorship, caring, and guidance.
I. INTRODUCTION

This article looks at interactions among global agribusiness, economic globalization, and labor migration in North America, with specific focus on the United States and Mexico. We highlight the following phenomena:

(1) the development of genetically engineered (GE) food crops as genetically-modified organisms (GMOs) and global intellectual property (IP) protection for these crops and other plant genetic resources (PGR);
(2) the increasing horizontal and vertical concentration of the agricultural seed-and-chemical, food processing, and food sale industries; and
(3) the lack of fit between U.S. immigration law and policy, international trade regimes (such as NAFTA),

1 We use the term “globalization” as does Professor Chantal Thomas in her piece on migration and social regionalism. As Professor Thomas states, “[Globalization] denotes specific substantive and institutional dynamics. Substantively, globalization indicates a political embrace of ‘market liberalization.’ The term must be understood as a term of art rather than a literal description, since the policies in this case study emphasized particular kinds of economic liberalization at the same time that they promoted other kinds of economic restrictions. . . . In addition to this substantive shift towards economic liberalism, ‘globalization’ indicates a transformation in the institutional nature of economic governance . . . a movement away from ‘hard’ assertions by nation-states of political and economic sovereignty, towards a more permeable political terrain in which decision-making power is shared with supranational actors.” Chantal Thomas, Migration and Social Regionalism: Labour Migration as an Unintended Consequence of Globalization in Mexico, 1980-2000 3–4 (Cornell Law Sch. Legal Studies Research Paper Series, Paper No. 09-013, 2009), available at http://ssrn.com/abstract=1422041.

2 See Sophia Murphy, Concentrated Market Power and Agricultural Trade 14 (EcoFair Trade Dialogue, Discussion Paper No. 1, 2006), available at http://www.iatp.org/documents/concentrated-market-power-and-agricultural-trade (“Horizontal concentration means that only a few firms dominate a given point in a production chain: the commercial seed market, heavy farm machinery, and most commodity processing are examples of horizontally concentrated markets. . . . Vertical concentration means that the same firm or few firms dominate more than [one] point on a production chain.”).

3 See generally Keith Aoki & John Shuford, Welcome to Amerizona—Immigrants
and the realities of labor migration as related to U.S. agro-
maquilas in the food picking, processing, and packing
industries.5

In Parts II–III, we work to identify and to outline how these
seemingly disparate and disconnected phenomena work together in a feedback loop6 of food production-and-consumption related activities. Intellectual property rights in the realm of global agribusiness and international trade agreements support the oligopolies and oligopsonies in the global food supply chain, which in turn drive the preeminent immigration patterns and demographic changes of North America. This feedback loop of global agribusiness, IP law, international treaties and trade agreements, and immigration law and policy shifts the focus of food supply and the means of its production (including labor and the utilization of farmland) out of or away from Mexico and into or toward the United States.

In our Concluding Remarks, Part IV, we consider possibilities for progressive intervention and interruption, in order to reimagine the feedback loop. It is intended that this imagination serve to “push back”

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6 “Feedback loop” means a cycle that is comprised of output from, or information about the result, of phenomena that causally influences other phenomena within the cycle and perpetuates the phenomena as a circuit or loop that feeds back into itself. Feedback loop cycles may produce increasing or diminishing returns, as well as intended and unintended consequences, as affects those entities that are involved in the loop. See, e.g., Drew Days S. III, “Feedback Loop”: The Civil Rights Acts of 1964 and Its Progeny, 49 St. Louis U. L.J. 981 (2004–2005) (providing other examples of legally significant uses of “feedback loop”).
against the redundant cycle this article describes and its troubling impacts on the genetic diversity of food crops, the global food supply, small and independent farmers outside the United States, U.S. agro-maquila labor migrants, and global labor rights and human rights.

II. THE RISE OF GLOBAL AGRIBUSINESS AND GMOs

A. Agrichemical Farming and IP Protection for GE Food Crops and PGR

Since the late-nineteenth century, North American and Western European nations have been home to steady movements toward the industrialization of agriculture, including the incorporation of scientific developments into what has become global agribusiness. Shortly after the “rediscovery” of Gregor Mendel’s writings on the laws of heredity in 1900, hybrid crop cultivation followed in the first two decades of the twentieth century, along with the early motorization of farm equipment.

7 See generally KEITH AOKI, SEED WARS: CONTROVERSIES AND CASES ON PLANT GENETIC RESOURCES AND INTELLECTUAL PROPERTY (2008) (describing in brief the rise of intellectual property protections for plant varieties and the enclosure of the genetic commons, and the subsequent movement of the agrichemical industry from manufacturing fertilizers, pesticides, and herbicides to manufacturing seeds in the context of industrial agriculture) [hereinafter Aoki, SEED WARS].

8 In 1899, the Royal Horticultural Society organized the International Conference on Hybridisation and on the Cross-Breeding of Varieties, which featured prominent scientists such as H.J. Webber of the USDA’s Plant Breeding Laboratory and Liberty Hyde Bailey of Cornell University. Some participants predicted that science was soon to make a significant impact on plant breeding. A year later, European botanists Hugo de Vries, Carl Correns, and Erich Tschermak independently published papers detailing rules of heredity that were later found to have been previously proposed by Gregor Mendel thirty-five years earlier. Across the Atlantic, a Washington State Experiment Station wheat breeder ensured the acceptance of these new theories in the United States when he came very close to an independent rediscovery of Mendelian inheritance in 1901. JACK R. KLOPPENBURG, JR., FIRST THE SEED: THE POLITICAL ECONOMY OF PLANT BIOTECHNOLOGY, 1492–2000 68–69 (Univ. of Wis. Press 2d ed. 2005) (1988) [hereinafter Kloppenburg].

Rapid increases in the mechanization of farming techniques led to larger and more specialized farming practices, allowing fewer and fewer farmers to cultivate and harvest increasing expanses of acreage.\textsuperscript{10}

At around the same time, chemical companies entered the agricultural sector and introduced the use of commercial fertilizers, pesticides, herbicides, and other chemical agents into farming practices.\textsuperscript{11} Monsanto, the agricultural biotechnology company founded in St. Louis at the turn of the twentieth century, came to be one of the dominant agrochemical suppliers of the so-called “Green Revolution” that swept the globe in the 1970s.\textsuperscript{12} Advanced under the dream of “one seed to feed

average annual consumption of commercial fertilizer from 3,738,300 tons per year in 1900–1909 to 6,116,700 tons per year in 1910–1919, and the introduction of big open-geared gas tractors in areas of extensive farming, enclosed gears for tractors, and small prairie-type combines with auxiliary engines).

\textsuperscript{10} Id.

\textsuperscript{11} Opponents of the unchecked spread of genetically modified seeds point to Monsanto’s “Roundup-Ready” crops. These are genetically modified crops designed to be resistant to the herbicide glyphosate so that all other unwanted vegetation is wiped out after spraying, leaving only the Roundup-Ready crop in place. However, when wind or bees transfer pollen from Roundup-Ready plants to wild plants, herbicide-resistant “super-weeds” may spring up. These super-weeds may call for the use of more potent and thus highly toxic conventional herbicides. Kristin Dawkins, Unsafe in Any Seed: U.S. Obstructionism Defeats Adoption of an International Biotechnology Safety Agreement, MULTINAT’l MONITOR, Mar. 1999, at 3, 13, available at http://multinationalmonitor.org/mm1999/mm9903.05.html; Ronnie Cummins, Hazards of Genetically Engineered Foods and Crops: Why We Need a Global Moratorium, In Motion Mag., Aug. 29, 1999, http://www.inmotionmagazine.com/geff4.html. In a related vein, a report authored by consultant Charles Benbrook of the Northwest Science and Environmental Policy Center in Sandpoint, Idaho, using data from the USDA, contends that farmers are using more herbicide than ever before despite biotech industry claims to the contrary. According to Benbrook, farmers applied 11.4\% more herbicide on Roundup-Ready fields when compared with fields treated with conventional herbicides. Tina Hesman, Report Says Monsanto’s Roundup Could Become Victim of Its Success, St. Louis Post-Dispatch, May 3, 2001, at C5.

\textsuperscript{12} Scientists working under the auspices of the Rockefeller and Ford Foundations, which funded international agricultural research centers, were the main catalysts behind the Green Revolution. These two foundations had united disparate and privately funded centers into a coordinated network in the hope of sidestepping the bureaucracy of the U.N. system, while at the same time exploiting the
the world,” the Green Revolution actually advanced the global economic dislocation of subsistence farmers and contributed to contemporary urbanization and other dimensions of global migration. Small, locally adopted agricultural practices were displaced by mass industrial farming techniques and the attendant expensive, intensive use of high-input chemical fertilizers, pesticides, and herbicides. By the 1980s, many of the harmful effects of the Green Revolution became increasingly apparent worldwide, including the decimation of plant genetic diversity and environmental degradation due to agricultural chemical runoff.

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13 See Aoki, Seed Wars supra note 7, at 22–24 (discussing both the dream and promise of the Green Revolution and its harsh realities for vast populations of the Global South).

14 The fear that the world would not be able to feed its ever-increasing population, especially in the developing world, was the concern that led to the Green Revolution. The Green Revolution inevitably caused the spread of modern agriculture worldwide. This new agriculture relied heavily on chemical inputs, machinery, technology, research and development networks, and state-supported investment. Elizabeth Bowles, Andhra Pradesh, India, as a Case Study in Perspectives on GMO’s, 34 Cumb. L. Rev. 415, 415 (2004); see also Cary Fowler & Pat Mooney, Shattering: Food, Politics, and the Loss of Genetic Diversity 130–31 (1990) (stating that due to their reliance on chemical inputs and farm machinery the seeds developed as part of the Green Revolution opened up the world to agrichemical corporations). For a comprehensive discussion of the Green Revolution see Jack Doyle, Altered Harvest: Agriculture, Genetics, and the Fate of the World’s Food Supply 255–81 (1985); Pat R. Mooney, Seeds of the Earth: A Private or Public Resource? 37–46 (1979).

15 The success of the Green Revolution specifically in Punjab, India, as elsewhere, was predicated on the displacement of genetic diversity on two levels. First, mixtures of diverse crops like wheat, maize, millets, pulses, and oil seeds were replaced by monocultures of wheat and rice. Second, the wheat and rice introduced were reproduced from large-scale monocultures that were derived from a very narrow genetic base. See Vandana Shiva, The Violence of the Green Revolution: Ecological Degradation and Political Conflict in Punjab 51 (1989). The well-recognized costs to the environment as a result of the Green Revolution’s promotion of irrigation, fertilizers, pesticides, and herbicides include fertilizer and pesticide runoff into surface waters and greater soil erosion. See Michael R. Taylor & Jeffrey Cayford, American Patent Policy, Biotechnology and African Agriculture: The Case for Policy Changes, 17 Harv. J.
In the wake of the U.S. Supreme Court’s 1980 decision in *Diamond v. Chakrabarty*, companies like Monsanto began to pursue genetic engineering of plant life as a partial, if ultimately unsatisfactory, solution to the problems of high-input industrial agriculture. Genetically engineered (GE) crops could be “designed” to produce their own pest-and-weed resistance, for example, or be adapted to grow in poor soil conditions due to salinity or drought. Thus, genetic engineering researchers argued, GE crops could present a way out of the destructive cycles of high-chemical input agriculture. By the mid-1990s, after discovering a genetically targeted delivery method to treat seeds (the “DNA Gun”), Monsanto positioned itself to lead the way in genetically modified (GM) crop development.


17 See Aoki, *Seed Wars*, supra note 7, at 41 (discussing *Diamond v. Chakrabarty* and its aftermath, including the role of Monsanto in the rise of genetically engineered monocrops).

18 Opponents of the unchecked spread of genetically modified seeds see it differently. They point to Monsanto’s “Roundup-Ready” crops. These are genetically modified crops designed to be resistant to the herbicide glyphosate so that all other unwanted vegetation is wiped out after spraying, leaving only the Roundup-Ready crop in place. However, when wind or bees transfer pollen from Roundup-Ready plants to wild plants, herbicide-resistant “super-weeds” may spring up. These super-weeds may call for the use of more potent and thus highly toxic conventional herbicides. See Dawkins, *supra* note 11; Cummins, *supra* note 11. In a related vein, a report authored by consultant Charles Benbrook of the Northwest Science and Environment Policy Center in Sandpoint, Idaho, using data from the U.S. Department of Agriculture, contends that farmers are using more herbicide than ever before despite industry claims to the contrary. According to Benbrook, farmers applied 11.4% more herbicide on Roundup-Ready fields when compared with fields treated with conventional herbicides. Hesman, *supra* note 11.

19 The DNA Gun is also referred to as the Gene Gun or Bioblaster. The technology at the heart of this innovation is Particle Gun Bombardment or Biolistic (*biology* + *ballistic*). This technology was developed by John Sanford, an...
its GE cotton, corn, soybeans, and canola to take the U.S. and Canadian markets by storm.

While Monsanto’s GE crops quickly dominated the North American market,\(^{20}\) public acceptance in the European Union (EU) was much harder to come by—especially in the United Kingdom and France, two countries that remained wary of unknown hazards that might arise from introducing GE crops into the food chain and the environment.\(^{21}\) In the late 1990s, Monsanto also encountered a public relations nightmare, as non-governmental organizations (NGOs) such as the Action Group on Erosion, Technology and Concentration; its predecessor entity; and

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\(^{21}\) Owing to the mostly unfavorable coverage of these so-called “Frankenfoods” in the European press, protests in Europe against their introduction consistently enjoyed front-page treatment whereas the American press dismissed protests here as insignificant. This European media coverage ranged from cautious questioning to outright panic. Moreover, the European consumers were supposedly less likely than were Americans to trust the judgment of authorities in the wake of a series of highly publicized food scares. Julian Borger, How the Mighty Fall, The Guardian, Nov. 22, 1999, at 2. It is also noteworthy that European concerns extended beyond any unidentified hazards to human health. These concerns also encompassed economic and social considerations such as a decline in European market dominance and competitive advantage and a feared upsurge in dependence on the North American biotechnology industry. Young-Gyoo Shim, Intellectual Property Protection of Biotechnology and Sustainable Development in International Law, 29 N.C. J. Int’l L. & Com. Reg. 157, 177 (2003).
the Rural Advancement Foundation International undertook an anti-Monsanto campaign. The NGOs focused on Monsanto’s licensing of what they called “Terminator” technology—a genetic engineering technique that, by rendering crops sterile, makes farmers’ seed saving practices futile and thus undermines (even obliterates) generations of farmers’ know-how.22

Activities, consequences, and trends shaped by twentieth-century Malthusian fears of global population outstripping food supply; development of Mendelian genetic insights, growth of the agrichemical-input and GE-seed markets; and proliferation of a common language of intellectual property (IP) protection all converge in the twenty-first century in the subject of plant genetic resources (PGR). GE agrichemical industries facilitate horizontal and vertical concentration in the global food supply system; they also provide powerful “push” and “pull” factors. GE crops continue to take increasingly large market shares in the global food supply, especially in staple food crops such as corn, canola, and soybeans.23 GE staple food crops as underwritten by IP protection provide a “push” because they significantly diminish the diversity of global food crops and increase global dependence on industrial monocrop agriculture, which operates via genetically modified proprietary seed technology and heavy inorganic chemical inputs in forms of fertilizers, herbicides, and pesticides.24 Even in the EU, which initially imposed a moratorium on the import of GE crops, by 2004 began accepting GE crops and other GMOs.25


23 See generally Aoki, Seed Wars, supra note 7.

24 Id.

B. Industrialization and Concentration of Farming and Food Transport, Processing and Sales

The rise of GE food crops and other GMOs and the extension of IP protection and IP legal regimes over PGR have also advanced vertical concentration of the global food supply chain. Increasing competition drives concentration in the wholesale and retail food industries, which mandates lower pricing as well as increased standardization and shelf life. Genetic manipulation and industrialization at the seed-and-chemical stage of the food supply facilitates both the creation and shape and food ingredients under the European Union’s novel foods regulation, signaling the end of the five-year moratorium on new trait approvals; Elizabeth Becker, Europe Approves Genetically Modified Corn as Animal Feed, N.Y. TIMES, July 20, 2004, at C11 (noting that three months earlier, the European Union had approved the importation of genetically modified corn for use as animal feed); Howard Mann, The Cartagena Protocol on Biosafety: An Analysis (June 1, 2000), available at http://www.isdlaw.com/docs/ASEAN%20-Mann%20paper.doc (prepared for the ASAE Workshop on International Trade in ASEAN Agricultural and Forest Products and Measures to Align Trade and Environment); Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Jan. 29, 2000, art. 18(2)(a), 39 I.L.M. 1027, 1035 (2000). The Cartagena Protocol, an agreement that promotes trade in biotechnology products that are environmentally safe, offers some, albeit little, comfort to those still opposed to the unbridled entry of genetically altered foods and food products, in that it mandates that shipment of such products clearly identify that they may contain living modified organisms. However, this labeling requirement is only required for transportation purposes and does not necessarily extend to subsequent consumer retailing. Two months before the Protocol went into effect, a relatively obscure U.N. agency, the Codex Alimentarius Commission, with the backing of all 168 member states, produced the first set of international guidelines for assessing and managing health risks posed by GM foods. The most significant guideline called for safety assessments of all GM foods prior to their approval for commercial sale. See Phil Bereano & Elliott Peacock, Harmony or havoc: can the WTO, Biosafety Protocol and Codex Alimentarius work together?, SCI Dev. (Jan. 1, 2005), http://www.scidev.net/en/policy-briefs/harmony-or-havoc-can-the-wto-biosafety-protocol-and-codex-alimentarius-work-together/; World Health Org., International Food Standards, Codex Alimentarius, http://www.codexalimentarius.org/standards/en/ (last visited Jan. 9, 2012).
of those demands and the ability to meet them. GE crops also integrate vertically with joint ventures and trade agreements involving the growth, production, and processing industries for food grains, as well as livestock and poultry.27

Horizontal and vertical concentration of the seed-and-chemical agriculture sector, which began in the early twentieth century, accelerated in recent decades and synched with other major shifts in the areas of farming practices, as well as changes in international finance, and global developments in labor and trade.28 Furthermore, as discussed in Part III, joint ventures and other agreements between industrial growers and grain or protein processing industries, provide both vertical integration and a “pull” factor for cross-border labor migration in violation of national immigration laws.29

Over the past century, the composition of farm ownership and agricultural labor on crop farms has increasingly shifted away from family-level farming and toward large corporate farming.30 Similarly, the number of confined animals raised for food and food production also increased greatly,31 and the locus of decision-making for the selection,

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27 Phil Howard, Consolidation in Food and Agriculture: Implications for Farmers and Consumers, The Nat. Farmer, 17, 17–18 (Spring 2006) (identifying and describing food chain cluster linkages — “when groups of firms join together to control every step in the food chain through . . . processes of horizontal integration, vertical integration, and global expansion” — involving Cargill, Monsanto, and Kroger and DuPont/ConAgra and Novartis (Sygenta)/Archer Daniels Midland, and asserting that it is likely that no more than four to six such food chain clusters exist worldwide).

28 See generally Aoki, Seed Wars, supra note 7, at 61–98 (discussing the rise and effect of overlapping international legal regimes for plant genetic resources in the late-twentieth and early-twenty-first centuries, including international intellectual property, trade, and labor treaties and agreements).


30 See discussion infra Part III.A-C.

31 Compare John Roberts, The Slaughter and Consumption of Food Animals in the United States for the Year 1909, 28 USDA BUREAU OF ANIMAL INDUS. ANN. REP. 253–54 (1911) (“The data gathered in connection with the latest decennial census (1910) make it possible for the first time to present complete statistics of
breeding, feeding, care, and other material conditions of these animals shifted from the family farm to multinational corporate firms.32 These firms provide both the food inputs and the markets for processing food animals and their produce (e.g. eggs, dairy products).33 For example, in broiler chicken production, firms provide both the birds and the feed to farmers, and then mandate decisions including building design or the schedules for everything from the delivery of chicks to the slaughter of broilers.34 The farmers provide the land, money, and labor, but the firms “own” the broilers and pay farmers on a piece-rate, usually three to four cents per pound.35

According to Mohr, in 2009 a total of 7.37 billion animals were killed for consumption in the United States, including chickens, turkeys, pigs, cattle, ducks, rabbits, fish, and shellfish. According to the 1911 USDA report about a century earlier the total slaughter in the United States was 167,294,473 including cattle, calves, swine, sheep, and goats).


33 In general, a “food processor” is a business involved in the creation of value-added food and/or drink products through such means as cutting, blending, combining, flavoring, thermal processing, infusing, drying, juicing, carbonating, or otherwise transforming primary agricultural and food input(s) into food and/or drink consumables for human and/or animals.

34 Stephen Martinez & Hayden Stewart, From Supply Push to Demand Pull: Agribusiness Strategies for Today’s Consumers, 1 Amber Waves 22 (2003) (providing an overview of historical evolutions in the U.S. broiler industry toward “consumer-driven agriculture”) (“Although most poultry farmers are making poverty level wages or below, without a contract they can’t pay off their mortgages and face foreclosure. Some cynics have suggested ‘why buy the farm when you can own the farmer?’ and describe chicken farmers as ‘serfs’ who are never able to escape their debts.”).

Today, the U.S. farming industry is part of a globalized, industrialized food system, in which a relatively small number of farms produce crops, feed grain, and animals. In the United States and in countries such as Mexico, the rise of GE crops as protected IP that is internationally enforced by treaties such as Trade Related Aspects of Intellectual Property (“TRIPS”) advances industry consolidation in the agricultural sector, including the consolidation of former subsistence farms into larger industrial farm operations.

36 William D. Heffernan, Biotechnology and Mature Capitalism 3 (June 6–8, 1999) (unpublished manuscript presented at the 11th Annual Meeting of The National Agricultural Biotechnology Council), available at http://www.foodcircles.missouri.edu/biotech.pdf (“As the twentieth century comes to a close, we hear more and more about needing only 20,000 to 30,000 farms in the United States producing feed grain, oil crops, and animals for the globalized, industrialized food system. These farms will be operating under a system that includes characteristics of production contracts like those used in the broiler sector, a hired labor system (industrialized system), or most likely a combination of both. None of these alternatives resembles the decentralized decision-making system of the past (i.e. the family farm system.”).

37 See supra note 1.

38 See supra notes 8–11 and accompanying text.


40 Howard, supra note 27, at 18; see also Ethan A. Huff, Consolidation of Seed Companies Leading to Corporate Domination of World Food Supply, NATURALNEWS.COM (July 27, 2011), http://www.naturalnews.com/033148_seed_companies_Monsanto.html; Deborah James, Food Security, Farming, and
Markets for agricultural inputs and outputs such as livestock and grain have become increasingly economically concentrated in the hands of transnational food retailers, who dictate farm-level decisions that shape both input and output markets alike. Major technological innovations in transportation and communications over the past three decades have also created global movement of vast quantities of agricultural commodities and a growing dependence on distant food sources. In many ways, our demand for strawberries in January or mangoes year-round, supplants considerations of local, regional, or national food supply and security. As Hendrickson et al. write:

[E]xtreme amounts of concentration exist in many markets for both commodities and inputs in the U.S., Brazil and other places in the world. Markets are particularly concentrated in grain processing, meat slaughter, and food retail. . . . [M]any of the same firms are operating in different locations around the world and in different commodity sectors (e.g. Cargill processes beef in the U.S., is a major grain trader and meat producer in Brazil, sells fertilizer in Brazil, and operates in China). Many of these firms have developed into food chain clusters . . . that operate around the world. . . . The key is to source whatever inputs are the cheapest and sell where your products can command the highest price.43

41 See Jelle Bruinsma, World Agriculture: Towards 2015/2030, an FAO Perspective 265–96 (Jelle Bruinsma ed., 2003), available at ftp://ftp.fao.org/docrep/fao/005/y4252e/y4252e10.pdf (presenting the main features of globalization in agriculture, and discussing why some countries have been successful in integrating their food and agricultural economies into the rapidly growing world markets, but also why others have largely failed to do so); see also Howard, supra note 27 (describing the development and likely number of global food chain clusters).


43 Hendrickson et al., supra note 35, at 12; see also William D. Heffernan, The Influence of the Big Three—ADM, Cargill, and ConAgra (June 11, 1999)
As a result, the demand created by emergent global food markets centralize power in the hands of transnational corporations that determine the logistics necessary for a profitable corporate bottom line.\textsuperscript{44} Once again focusing on the example of global agribusiness giant Cargill, Hendrickson et al. write:

In terms of infrastructure, Cargill is exceptionally adept in the storage, handling and transportation of agricultural goods and food commodities. . . . Within North America . . . the key to powering transportation is the consolidation of storage (e.g., grain elevators) along major waterways and continental railways. Besides inland storage along the Mississippi River and other rivers leading to the Atlantic and Pacific coasts, the major ports for grain and food exports also are in the hands of very few agribusiness corporations, namely Cargill and ADM. . . .

These firms are reproducing the same infrastructure in South America and East Asia. In Brazil, four transnationals control virtually all crushing capacity, an activity which until the ‘90s had strong national capital participation. In many States these firms hold complete monopoly positions.\textsuperscript{45}

\textsuperscript{44} Howard, \textit{supra} note 27, at 18 (“The implications of what [a food chain cluster] system will mean for farmers can already be seen in the poultry industry of the United States. Ninety-five percent of chickens produced for meat are grown under production contracts with fewer than forty companies. The farmer furnishes the land and labor, and is required to invest hundreds of thousands of dollars for buildings and other equipment. The company provides the chicks, feed and medicine and agrees to pay a guaranteed price per pound. . . . Now that four vertically integrated firms control fifty percent of the market, the terms of the contracts are much more favorable to the companies. Their power is so great that some companies have been found to systematically cheat farmers by underestimating the weight of birds, overestimating the weight of feed, or providing poor quality checks or feed.”). \textit{See generally VANDANA SHIVA, BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE} (1999); \textit{VANDANA SHIVA, STOLEN HARVEST: THE HIJACKING OF THE FOOD SUPPLY} (2000).

\textsuperscript{45} Hendrickson et al., \textit{supra} note 35, at 24.
In the context of agricultural transportation infrastructure, the routinization of consolidation-and-rationalization schemes has led to larger profits for the corporate agribusiness giants. These profits are ultimately unsustainable because they come at high costs for governments in the form of escalating road maintenance, and reduced tax bases. The farms in rural communities that have thus far survived transportation consolidation are rapidly disappearing, and taking the communities along with them. With non-corporate farming an increasingly threatened way

46 In general, a “rationalization scheme” is an organized, implemented plan for such ends as maximizing efficiency, distributing costs, conserving resources, or promoting cooperation and self-regulation in order to reduce competition-related costs and regulatory oversight. Rationalization schemes may be implemented by government or by specific industries. See, e.g., Dan Bacher, Lawsuit Filed Against Privatization of Public Trust Fisheries (Oct. 28, 2010), available at http://calitics.com/diary/12780/lawsuit-filed-against-privatization-of-public-trust-fisheries (claiming expected loss of jobs and access to fish expected under federal “rationalization” scheme); Richard James Hammond, Food and Agriculture in Britain, 1939–45: Aspects of Wartime Control (1954) (discussing motivations behind and impacts of Britain’s milk distribution rationalization scheme, and the role of its Ministry of Food in establishing a new price structure and marketing arrangements in the milk industry in England and Wales).


48 See generally Christopher D. Cook, Diet for a Dead Planet: Big Business and the Coming Food Crisis (2006) (arguing that corporate control of farms and supermarkets, unsustainable drives to increase agribusiness productivity and profits, misplaced subsidies for exports, and anemic regulation have combined produce food that is tied to a vast range of economic, environmental, and social epidemics).

of life, displaced farmers must migrate in search of work for economic survival. Having lost or otherwise been driven off their land, whether due to co-optation or economic hardship, former subsistence farmers and other workers from Mexico and Central American nations migrate to the United States, often without authorization, in search of jobs. Structural adjustment policies mandated by the International Monetary Fund (IMF) and the World Bank, combined with foreign investment and privatization in the NAFTA era have catalyzed these “rural crises” and caused social safety nets and formal-economy jobs in these countries to shrink or disappear altogether. In Part III, we discuss two hemispheric results of the aforementioned trends and changes. The first is a powerful “push” for industrialization of Mexico’s food crop agricultural sector. The second is a similarly powerful “pull,” through food supply concentration,

family farms [under 500 acres] would disappear while large farms [over 2,000 acres] would increase by twenty-two percent and introducing the probability that rural communities may disappear if small farms in those areas disappear and are replaced by a single “mega-farm”).

50 See Field of Tears, Economist, Dec. 18, 2010, at 39, available at http://www.economist.com/node/17722932 (noting an estimate from Rob Williams, director of the Migrant Farmworker Justice Project, that more than ninety percent of migrant farmworkers are undocumented immigrants).

51 Mexico’s structural adjustment policies of the 1980s redirected resource-extraction, farming, and other land use practices, as well as manufacture and production of “socially necessary goods and services,” from domestic ownership and consumption to multinational corporate ownership and export to industrialized nations for foreign consumption. This produced lower standards of living for small farm owners and low-skilled laborers though increased domestic prices for necessity goods (e.g. food, cooking fuel), as well as reduced demand and depressed wages for unskilled labor. See David Barkin, Distorted Development: Mexico in the World Economy 99–100 (1990). See generally Neoliberalism: Early 1980s—Structural Adjustment Programs, Mexico Solidarity Network, http://www.mexicosolidarity.org/programs/alternatriveeconomy/neoliberalism (last visited Oct. 23, 2011).


53 Id.

54 Id.
that draws displaced Mexican farmers northward across the U.S./Mexico border in search of jobs in the food picking, packing, and processing industries. The cross-border migration that results from this “pull” often occurs in violation of U.S. immigration law.

III. **Economic Globalization and Labor Migration in North America**

**A. Globalization of Finance and Trade: Effects on Mexico’s Farming Agriculture, Economy, and Population**

Part II highlights historic trends and recent developments in the industrialization of farming, food processing, and food sales. Such macro-level economic, environmental, and agricultural changes also play out locally, regionally, nationally, and internationally. Over the past thirty years, changes in global macroeconomics led to domestic economic crises and changes in Mexico’s legal structure that opened doors to market liberalization promoted by the IMF and the World Bank, and continued by the North American Free Trade Agreement (NAFTA). These changes include: (1) allowing for alienation of rural property; (2) cutting public spending to shrink the public sector; (3) raising interest rates through monetary policy changes; and (4) devaluing currency. The consequences

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55 See generally Keith Aoki, John Shuford et al., *In)visible Cities: Three Local Government Models and Immigration Regulation*, 10 Oregon Rev. Int’l L. 453 (2008) [hereinafter Aoki & Shuford, *In)visible Cities*]. As we discuss in Part III.B, *infra*, these industries have moved out of U.S. major metropolitan areas and into other regions and locales, in many cases “ruralizing,” in order to counter unionization, labor costs, and production costs. The migration of these industries, and of labor as following these jobs, have produced massive, even unprecedented, demographic shifts across the United States, and within many states, counties, metropolitan regions, micropolitan communities, and rural areas.

56 Dell Champlin & Eric Hake, *Immigration as Industrial Strategy in American Meatpacking*, 18 Rev. Pol. Econ. 49 (2006) (noting that the meatpacking industry increasingly demands and has grown increasingly dependent upon cheap, low-skilled, short-term labor provided by immigrants, including undocumented immigrants, who are drawn to rural non-union company towns throughout the Southern United States).

of market liberalization for Mexico’s government, rural communities, local business, and small farmers have been disastrous.

Mexico underwent a severe debt crisis in 1982 when the country’s short-term debt, owed primarily to commercial banks, more than doubled as a percentage of total debt from 14.39% to 30.44%, while overall external debt stood at 49% of GDP. A weakening global commodities market lowered foreign exchange earnings while rising international interest rates made Mexico’s interest rates much more expensive, contributing to the crisis. The IMF stepped in to address the debt crisis by lending funds to Mexico and playing a major role in restructuring its sovereign debt. Although the IMF’s intervention preceded economist John Williamson’s coining of the phrase Washington Consensus in 1989, it followed many of the ten basic, market-friendly neoliberal economic policy prescriptions that Williamson identified and which were influential from 1980 through 2008 among global lending and banking institutions, economists, politicians, and media pundits. These recommendations included reducing government spending, selling off state-owned companies to private investors, and liberalizing markets by removing trade and investment barriers and price controls.

Lending-and-development programs under the Washington Consensus, and subsequent U.S./Mexico trade policies under NAFTA, represent both a building upon and a shifting away from Mexico’s statist economy toward a market-oriented model. As Chantal Thomas notes:


60 Thomas, supra note 1, at 6.

61 See Carmen M. Reinhard, Kenneth S. Rogoff & Miguel A. Savastano, Debt Intolerance, 34 Brookings Papers on Econ. Activity 1 (2003) (noting that between the years 1824 and 1999 Mexico and Venezuela were in a state of default or debt restructuring for 47% and 39% of the time, respectively).


63 In general, “statism,” or “economic statism,” refers to the practice or doctrine of giving a centralized government control over economic planning and policy.
[The] economic shocks of the debt crisis and related hardships created conditions for popular tolerance of reform . . . which when coupled with a transformation of the sociological profile of the administrative and political leadership in Mexico, led to a strong internal push toward liberalization. . . . [taking] a decisive turn away from a statist towards a neoclassical economic policy model and a reform agenda based on economic liberalization.64

Following the 1982 Stabilization Program, Mexico’s public spending and state investments in the national economy decreased sharply. Public sector deficits dropped from 18% of the GDP to only 8% by 1983,65 and within a decade Mexico’s state-owned enterprises shrank from more than 1,000 in 1982 to just over 200 in 1992.66 Through a combination of these initiatives, the Mexican budget went from a deficit of 16.9% in 1982 to a surplus of 0.5% in 1992.67

Professor Thomas points out that “it might be argued that the overarching goal in the initial phases of the Washington Consensus era was the stabilization of the monetary and currency environment in borrower countries, as the name of the structural adjustment programmes [sic] adopted by Mexico and other client governments indicated.”68 Indeed, along with macroeconomic reform, currency stabilization in the 1980s and 1990s began to create environments of greater investor confidence, and the U.S. Treasury Department further restructured Mexico’s currency by reducing and securitizing Mexico’s sovereign debt.69 However, the budget surplus and gains in investor confidence came at steep prices for

64 Thomas, supra note 1, at 8–9; see also Leslie Elliot Armijo & Philippe Faucher, We Have a Consensus: Explaining Political Support for Market Reforms in Latin America, 44 Latin Am. Pol. & Soc’y 1 (2002)
65 Thomas, supra note 1, at 10.
67 Dornbusch & Werner, supra note 59, at 260.
68 See Thomas, supra note 1, at 12; Timothy A. Canova, The Washington Consensus and the Limits of Citizen Participation and War, in Democratic Citizenship and War (Yoav Pekl, Noah Lewin-Epstein, Guy Mundiak & Jean Cohen eds., 2010).
69 Thomas, supra note 1, at 12.
Mexico’s public and private sectors, as well as its unions, labor force, and consumers, as Mexico’s domestic growth stayed low and prices remained high (despite macroeconomic reforms) and the government’s focus on disinflation obscured the need for a correction in currency values.70 Rampant currency speculation and political instability71 drove emergency currency devaluation in December 1994,72 which caused the peso to drop in value by 50%73 and short-term interest rates to run

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70 See Joseph A. Whitt, Jr., *The Mexican Peso Crisis*, 81 Fed. Res. Bank Atlanta Econ. Rev. 1, 4–8 (Jan./Feb. 1996), available at http://www.frbatlanta.org/filelegacydocs/j_whi811.pdf. Economists John Williamson (of the Washington Consensus) and Rudiger Dornbusch pointed to a substantial deficit in Mexico’s current accounts as a likely cause of the peso’s overvaluation and subsequent crash; Williamson estimated the overvaluation at somewhere between ten and twenty percent. Mexico’s high debt loads from financing two decades of increased spending, compounded by low oil prices and a decade of hyperinflation between 1985 and 1994 left it unable to withstand economic fluctuations. Williamson and Dornbusch testified before Congress in 1993 to recommend policy action to reduce the peso’s real value. The Mexican government demurred on grounds that “the current account deficit was not a concern because it was caused by a private capital inflow that was financing investment spending, not by fiscal deficits or excessive monetary expansion.” Dornbusch and Alejandro Werner argued that Mexico’s current account deficit had caused the peso to become dangerously overvalued and that the Mexican government needed to act quickly to devalue the peso. Dornbusch and Werner contended that overvaluation had stagnated Mexico’s economic growth, and that the standstill would not be broken without currency revaluation. The overvaluation resulted from interactions between Mexico’s income policies and its exchange rate as reflected in the pacto – the agreement among business, labor and government to limit wage and price increases, including inflation in import prices. Dornbusch & Werner, supra note 59.


72 Id.

73 Mexico had been propping up the currency’s value for some time by buying Mexican pesos and selling U.S. dollars. This had a dramatically negative effect on Mexico’s central reserves, which drained from $28–30 billion late 1993 or early 1994 to just $6-7 billion in mid-December 1994. On December 20, Mexico announced a 15% devaluation of the peso, which touched off an investor pullout on fears that the Mexico’s central bank must be running out of reserves. The December 22 decision to let the peso “float” and abandon the fixed exchange rate sent the peso’s value down another 30% within a week. It
up to 40%. The U.S. Treasury, the Bank of Canada, the Bank of International Settlements, and the IMF provided a $50 billion bailout package of guarantees and loans to prevent Mexico’s default on its foreign debt obligations; in exchange, Mexico acceded to yet another round


See Illegal Immigrants and Devaluation in Mexico, 2 Migration News (Jan. 1995), available at http://migration.ucdavis.edu/mn/comments.php?id=515_0_2_0_C (“Mexico was headed for a deficit in its current account trade balance of $30 billion in 1994, equivalent to almost 8% of its $395 billion GDP. Its reserves fell from $30 billion early in 1994 to $6 billion on December 22 as Mexico attempted to support the peso at a rate of 3.45 pesos to $1. Nonetheless, Mexico’s new Finance Minister, Jaime Serra Puche, confidently predicted in mid-December that the economy would grow by 4% in 1995, and that the peso-dollar exchange rate would remain stable. On December 19, Zapatista rebels reported falsely that they had taken over 38 towns in Chiapas. On December 20, Mexico devalued the peso, and it eventually fell over 40%, from 3.4 pesos to $1 to 5.7 pesos to $1, before settling at 5 pesos to $1 on December 29. Mexican interest rates jumped to 40%, credit dried up as banks stopped lending, the Mexican stock market fell sharply, and there were fears that Mexico would not have enough dollars to pay the interest it owes on its foreign debts.”).

of IMF stabilizations and announced additional austerity measures and reforms.\textsuperscript{76}

Yet it was the implementation of NAFTA, which went into effect in January 1994, which epitomized the market liberalization of Mexico.\textsuperscript{77} NAFTA eliminated restrictions on cross-border trade and investment\textsuperscript{78} and phased out customs duties and tariffs in successive stages on trade between the United States and Mexico.\textsuperscript{79} Mexico underwent further economic instability as financial austerity measures meant more declines in public sector employment and as the effects of NAFTA’s provisions weakened Mexico’s unions by introducing greater flexibility into labor regulations.\textsuperscript{80} The private sector failed to grow enough to absorb the

\textsuperscript{76} In February 1995, Mexico promised to pay its oil export revenues into a U.S. Federal Reserve account as a guarantee of repayment on its loan debt. Later in the month, Mexico announced increased customs duties on various imports from countries that are not parties to a free trade agreement involving Mexico, thus giving competitive advantage to the United States and Canada. Finally, in March 1995, Mexican President Ernesto Zedillo presented a range of austerity measures occasioned by IMF stabilizations, as well as other reforms regarding wages and revenues. These included: 10% reduction in government spending; 20% increase in electricity prices and 35% in gas prices; 100% increase in transportation prices; 10% increase in the minimum wage; 50% increase in the value-added tax; and increase in interbank interest rate (from 74% as of March 9th to 109% on March 15). See NAFTA Timeline, FINA-NAFI, http://www. fina-NAFI.org/eng/integ/chronologie.asp?langue=eng&menu=integ#crise (last visited Oct. 25, 2011).

\textsuperscript{77} Bill Ong Hing, Ethical Borders: NAFTA, Globalization, And Mexican Migration 4–5 (2010).


\textsuperscript{80} See Van Horn, supra note 5 (“The combination of family farms shutting down and unionization and purchasing power decreasing contributed to the rise in Mexican immigration, and with it the number of undocumented persons. In 1993, the year before NAFTA went into effect, approximately 3.9 million undocumented Mexican immigrants lived in the U.S. In 2009, there were 11.1 million, an increase of almost 300%.”). For discussions of the effects of NAFTA and labor side agreements like the NAALC on labor issues in Mexico, Mexican labor law, labor-related migration and immigration, and Mexican labor unions and unionization, see generally Hufbauer & Schott, supra note 73, at 90–105,
Pastures of Peonage: Tracing the Feedback Loop of Food Through IP, GMOs, Trade, Immigration, and U.S. Agro-Maquilas

newly unemployed, as overvalued currency coupled with high interest rates discouraged local investment by smothering the ability of domestic firms to get the credit needed to expand. These changes shrank Mexico’s formal economy, expanded its informal economic sector, and increased poverty.

Meanwhile, the introduction of imports following NAFTA brought a shift in consumer from domestic to imported items, particularly since the overvalued currency meant that prices of Mexican goods were at all-time highs relative to imported and international goods. Also, while Mexican “exports grew throughout this period, they were far outstripped by imports.” By 1999, five years after the implementation of NAFTA, Mexico’s trade surplus had fallen from 10% of its GDP to a mere 2%. In this era of global changes in international financial reforms and trade agreements, maquiladoras.

81 Van Horn, supra note 5.
82 See Dornbusch & Werner, supra note 59, at 260.
83 The term “informal economy” refers to economic activity that is not monitored by any level or form of government, or is untaxed, or is not included in any GNP calculation. Informal economies exist in all countries, and in developing countries approximately seventy percent of the potential workforce earns its living through informal, rather than formal, economic participation. In many instances, workers in the informal economic sector are self-employed or engaged in unregulated employment, for no other reason than they cannot gain employment, or sufficient employment, in the formal sector. See Alejandro Portes & William Haller, The Informal Economy, in HANDBOOK OF ECONOMIC SOCIOLOGY (N. Smelser & R. Swedberg eds., 2005).
84 See generally CANOVA, supra note 68.
85 CANOVA, supra note 68, at 24.
86 Thomas, supra note 1, at 14.
87 In general, maquiladoras refer to foreign-owned, low-wage or piecework assembly plants located in Mexico, especially along the U.S./Mexico border in cities. Parts and materials are shipped to Mexico, where the finished product is assembled and exported, usually to the original market (e.g. the United States). See Rosenberg, supra note 4 (“There are over one million Mexicans working in over 3,000 maquiladora manufacturing or export assembly plants in northern Mexico, producing parts and products for the United States. Mexican labor is inexpensive and courtesy of NAFTA (the North American Free Trade Agreement), taxes and custom fees are almost nonexistent, which benefit the profits of corporations. Most of these maquiladora lie within a short drive of the U.S./Mexico border. Maquiladoras are owned by U.S., Japanese, and
spread widely alongside the U.S./Mexico border. As Professor Chantal Thomas notes:

Dislocations caused by instability in international capital flows and exchange rate policy appear to have been directly linked to surges in maquiladoras, with sharp increases in maquiladora operations tracking peso devaluations.\(^{88}\)

Today more than a million Mexicans work in the three thousand-plus maquiladoras near the U.S./Mexico border. Millions more, however, work in agro-maquilas, those maquila-style\(^{89}\) workplaces in the food picking, processing, and packing industries for produce and proteins. Agro-maquilas may be located either in proximity to the U.S./Mexico borderlands or at distance from the border within the territorial United States or in Mexico. Indeed, many agro-maquila sites are deep within the territorial United States. While the North American Agreement on Labor Cooperation (NAALC), NAFTA’s so-called “side agreement” on labor,

European companies and some could be considered “sweatshops” composed of young women working for as little as 50 cents an hour, for up to ten hours a day, six days a week. However, in recent years, NAFTA has started to pay off somewhat—some maquiladoras are improving conditions for their workers, along with wages. Some skilled workers in garment maquiladoras are paid as much as $1–$2 an hour and work in modern, air-conditioned facilities. Unfortunately, the cost of living in border towns is often 30% higher than in southern Mexico and many of the maquiladora women (many of whom are single) are forced to live in shantytowns that lack electricity and water surrounding the factory cities. Maquiladoras are quite prevalent in Mexican cities such as Tijuana, Ciudad Juarez, and Matamoros that lie directly across the border from the interstate highway-connected U.S. cities of San Diego (California), El Paso (Texas), and Brownsville (Texas), respectively. . . . Maquiladoras primarily produce electronic equipment, clothing, plastics, furniture, appliances, and auto parts and today eighty percent of the good produced in Mexico are shipped to the United States. Ninety percent of the goods produced at maquiladoras are shipped north to the United States. While some of the companies that own the maquiladoras have been increasing their workers’ standards, most employees work without even knowledge of unions (a single official government union is the only one allowed) and some work up to 75 hours a week. Some maquiladoras are responsible for significant industrial pollution and environmental damage to the northern Mexico region.”).

\(^{88}\) Thomas, supra note 1, at 20.

\(^{89}\) Rosenberg, supra note 4.
asks governments to promote a wide variety of labor principles, it “does not establish positive obligation but rather addresses signatories’ existing labor laws . . . [and] is relatively underused.”

Changes in Mexico’s patterns of investment, fiscal and exchange rates, and trade relations with the United States also contributed to massive labor migration from Mexico to El Norte from the mid 1990s onward. Although NAFTA was integral in advancing economic liberalization via trade, it did not address such issues as international labor migration or specific policy considerations like the need for open borders or other liberalization of immigration laws. Saskia Sassen has suggested, contrary to conventional wisdom, that human migration flows track investment flows; when a country such as the United States invests in a country like Mexico, the investment flow establishes a feedback loop that leads to increased migration from the poorer nation to the richer one. Similarly, Professor Thomas writes:

When a U.S. business invests in Mexico, old labour markets are displaced and new labour markets are created; and simultaneously, new transnational networks in communication and transportation are forged, creating

90 Thomas, supra note 1, at 21, 24.
a hydraulic effect that draws migrant workers into the stream of transnational labour market[s].

Indeed, the dynamics of cross-border displacement and creation of markets make migration more attractive and perhaps even necessary for economic survival while it simultaneously makes hard currency remittances from abroad more desirable.

The existence of a feedback loop that involves NAFTA (which is a trade regime but also involves aspects of the kinds of IP protections discussed in Part II), other forces of economic liberalization, and northward labor migration does not suggest that market liberalization and trade integration are substitutes for labor migration. Rather: market liberalization and trade integration may complement, and even contribute to, labor migration. A result of complex macroeconomic machinations, including peso devaluations, “migrant labour also flowed into the United States. Record immigration into the United States . . . reached an all-time high.” In 2005, 190 million individuals (roughly 3% of the

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94 Thomas, supra note 1, at 27.
95 Id. at 5-6.
97 See Hing, supra note 77, at 22, 70. See also Howard F. Chang, Migration as International Trade: The Economic Gains from the Liberalized Movement of Labor, 3 UCLA J. Int’l L. & Foreign Aff. 371, (1998); Jennifer Gordon, People are not Bananas: How Immigration Differs From Trade 104 Nw. U. L. Rev. 1109 (2010).
98 Thomas, supra note 1, at 1; Hing, supra note 77, at 5.
99 See Dornbusch & Werner, supra note 59, at 260.
global population) lived outside of their birth country,101 with the United States’ share of total immigration worldwide standing at 20.2% (roughly 38 million).102 “Mexico is by far the leading country of origin for U.S. immigrants, accounting for a third (32%) of all foreign-born residents and two-thirds (66%) of Hispanic immigrants.”103 Indeed, according to the Pew Hispanic Center, “[t]he U.S. is the destination for nearly all people who leave Mexico,” a category which represents about 10% of Mexican nationals.104

Regardless of immigration status, labor and economic factors are the primary reasons for migration from Mexico to the United States. Persons who were born in Mexico comprise nearly 60%105 of the approximately 11.2 million undocumented and/or unauthorized immigrants in the United States today.106 As labor follows jobs, millions of Mexico’s rural dispossessed are “pulled” northward by employment prospects in non-unionized, low-wage U.S. agro-maquila industries such as picking, processing, and packing of produce and protein (e.g. beef, chicken, and pork).107 Many of these workers come from failed small family farms, driven under by vertical and horizontal integration of the

104 Id.
105 Id.
107 See Sylvia R. Lazos Vargas, Latina/o-ization of the Midwest: Cambio de Colores (Change of Colors) as Agromaquillas Expand into the Heartland, 13 BERKELEY LA RAZA L. REV. 343, 348–49 (2002) (describing the social and legal issues that new immigrants face as they move into the Midwest to work in the agromaquillas); see also infra notes 128, 134.
farming industry. These workers comprise a permanently poor, politically powerless, widely resented, and imminently exploitable underclass within the territorial United States that, in many ways, exists to prop up the U.S. food manufacturing industry and is not free to exit.\textsuperscript{108} If these persons can successfully return home, they return to the economic and agricultural devastation they were first “pulled” to leave.

\textbf{B. El Norte: U.S. Agro-Maquilas and the New Meatpacking Workplace}

Historic transformation of the traditional farmer from peasant to small/family farm owner functioned on the assumption that significant labor and management inputs arose from within the farming family.\textsuperscript{109} However, due to the kinds of transformations discussed \textit{supra}, Part II, farmers in the United States, Mexico, and elsewhere around the world have lost power over the use and control of their land; this occurs, for example, with respect to production contracts for food or food-producing animals.\textsuperscript{110} This also occurs through mandatory seed-and-chemical

\begin{footnotes}
\item[108] See generally William Arrocha, \textit{Arizona’s Senate Bill 1070: Targeting the Other and Generating Discourses and Practices of Discrimination and Hate}, 9 J. of Hate Stud. 65 (2011) (discussing the criminalization of undocumented immigrants, especially Latina/o laborers, and incarceration in the for-profit American private prison system, particularly the Corrections Corporation of America).
\item[109] See Aoki, \textit{Seed Wars}, \textit{supra} note 7, at 9 (providing a brief history of seed cultivation and explaining the human development from hunter-gathers to industrial farmers); see also Debraj Ray, \textit{Development Economics} (1998) (discussing the heavy labor inputs on the traditional family farming model in order to maximize production from an identified, smaller plot of land).
\item[110] For an example of legislative attempts to ameliorate the potential harshness of production agreements and producer/contractor power imbalances see \textit{Section by Section Explanation Producer Protection Act}, Iowa Dep’t of Justice, Office of the Att’y Gen., http://www.state.ia.us/government/ag/working_for_farmers/2000_news/producer_protection_act.html (last visited Dec. 17, 2011) (“Section 9. Unfair Practices. The combination of rapid consolidation in agriculture and the rise of widespread contracting in agriculture gives rise to concerns of unequal information, unequal bargaining power, and the potential for anti-competitive practices. The experience in the highly concentrated poultry industry demonstrates that abusive practices can be imposed on producers in connection with contracts. Retaliation, coercion, and discrimination against poultry producers is all too common.”).
\end{footnotes}
bundle arrangements dictates by corporate agribusiness giants like Monsanto and Syngenta, which produce GE staple crop seeds and other GMOs to facilitate (and indeed stimulate) retailer demand and consumer expectation for uniform produce and crops with long transport lives and shelf lives. Similarly, neither the small/family farmers who have thus far survived consolidation nor organized labor has much say over labor conditions—perhaps not even in the case of labor within the farming family. Here too, the terms and conditions are increasingly controlled by global agribusiness and shaped by economic globalization, and the dynamics raise havoc in the public sector—in this case, misalignment of U.S. immigration law and policy with the realities of global agribusiness, trade, and labor migration.

While the proliferation and expansion of industrialized farming reduced labor-intensiveness, agribusiness systems such as fruit, vegetable, and staple crop production still demand large bursts of seasonal labor at particular phases of the growing and picking/harvesting seasons, as well as new labor due to employment turnover. Sharp tensions exist between wage labor, non-wage labor, and family labor. Adding to these tensions are recalcitrant conflicts between organized labor and farmers that make traditional labor organizing difficult. Often, these tensions

111 See Aoki, Seed Wars, supra note 7.
112 Id.
115 See Juan F. Perea, The Echoes of Slavery: Recognizing the Racist Origins of The Agricultural and Domestic Worker Exclusion from the National Labor Relations Act, 72 Ohio St. L.J. 95, 127 (2011) (noting that in the absence of protective state legislation, farmworkers can easily be fired for seeking to join or organize
are higher in regions that recently have come to rely, or to rely much more heavily, upon immigrant labor for agribusiness needs. Significantly, this segment of the U.S. workforce consists of former small or family farmers who, due to “push” and “pull” factors structurally tied to the rise of global agribusiness and economic globalization, have been forced out of Mexico or Central American countries and into low-wage, non-unionized work in many regions throughout the territorial United States.

Agricultural economist Herman Daly has argued for a fundamental rethinking of economic scarcity premised on the views that labor is in fact an abundant resource but that natural and chemical resources may be truly scarce. Investment funds are purchasing land, water, and a union or advocate for mutual aid and protection); Michael H. LeRoy & Wallace Hendricks, Should “Agricultural Laborers” Continue to be Excluded from the National Labor Relations Act, 48 Emory L.J. 489, 492–93 (1999) (arguing that the lack of policy uniformity among state laws regulating agricultural employment exacerbates an inconsistency with the NLRA’s treatment of other private-sector employees, which, when analyzed together with the seasonal and migratory nature of farm work, provides built-in disincentives to farmworker unionization); see also J.R. Norton Co. v. Agric. Labor Relations Bd. ex rel. United Farm Workers of Am. (UFW), 238 Cal. Rptr. 87 (Cal. Ct. App. 1987) (holding that there was no remedy under California’s Agricultural Labor Relations Act to address the failure of agricultural employer operating fields in California, Arizona, and New Mexico to rehire California employees in Arizona and New Mexico); see also, e.g., Eric Holt-Giménez, The Coalition of Immokalee Workers: Fighting modern day slavery in the industrial food system, Inst. for Food and Dev. Pol’y/Food First (Mar. 12, 2009), http://www.foodfirst.org/en/node/2389 (underscoring the longstanding struggle between Immokalee migrant workers and the tomato agribusiness in Florida as modern-day slavery or peonage; in 2009, workers were being paid forty-five cents per thirty-two pound bucket of tomatoes, the same wage paid back in 1978, noting modern cases of farmers beating, enslaving, falsely imprisoning, and extorting money from farmworkers).


118 Herman E. Daly, Beyond Growth: The Economics of Sustainable
natural and mineral resource rights, and corporations are re-allocating the natural resources and chemicals such as phosphate and nitrogen, on which industrialized agriculture depends. Hendrickson et al. depict the price-cost squeeze on farmers thusly:

In the U.S., projected seed costs per acre will double next year (2009) for corn, and cash rents will skyrocket at a time when Midwestern maize farmers already need $4.50/bushel to break even. Despite recent highs in the futures markets, the fall price for maize will likely be somewhere near $5-6/bushel—a decent living this year, but perhaps not next year.

The cost of petroleum, in the three major ingredients used in fertilizers, the cost of seed and the cost of highly competitive cropland have risen sharply. The cost of fertilizer in the Midwest has more than doubled in the last four years. A recent study indicates that the cost of fertilizer for Illinois corn farmers was $118 per acre. They estimate that the cost for 2009 will rise to $215 [and] estimate that all non-land costs for producing corn in 2008 is $388 per acre [and] that it will rise to $529 per acre in 2009.119

These trends reveal an unfolding global resource grab by firms that heretofore had not been involved in agriculture but are now buying up large tracts of land, water rights, and fertilizer ingredients.120 As a result, control of these resources is shifted away from the farmers who work the land and grow the crops and toward the powers-that-be in the expanding global agribusiness and food production oligarchies.

Assuming that Daly’s thesis is correct—that, in the agribusiness model, labor is in fact an abundant resource—then labor quickly becomes, and indeed must be treated as, an inexpensive input and a readily renewable resource. Creating and maintaining conditions for large pools of cheap labor is a key profit strategy of the global agribusiness and food supply

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119 Hendrickson et al., supra note 35, at 35.
120 Id.
systems. Keeping agricultural labor costs low is also a classic strategy to deal with the squeeze of declining prices and rising costs. For thousands of years, through slavery and servitude, it has been possible to source or transport human labor globally wherever a need exists and wherever it is cheapest to obtain and maintain. Today, in many respects, those basic conditions are fundamentally unchanged; it is possible to site inexpensive labor both within and beyond national boundaries. Domestically, the legally uncertain status of migrant farm and food processing workers can be exploited to prevent organizing for formalized, wage-based labor arrangements and forced to accept piecework reimbursement and deskill, non-union jobs. There is little protection available for the

121 Daly, supra note 118, at 130.

Multinational corporate oligopolies (a small number of large producers or wholesalers who control markets) and oligopsonies (a small number of large buyers or retailers who control markets) in the global food supply chain have emerged with both shareholder and management imperatives to keep production costs low and corporate profits high. The top food processing and packing (including meat and poultry) firms in 2005 and their annual profits were Tyson Foods ($23 billion), Smithfield Foods ($9 billion), ConAgra ($8 billion), and Swift & Company ($7 billion).\footnote{126}{Vargas, \textit{supra} note 107, at 347; Mary Hendrickson & William Heffernan, \textit{Concentration of Agricultural Markets} 4 (2007).} Tyson Foods acquired Iowa Beef Processors, Inc. in 2001 and renamed it Tyson Fresh Meats, a subsidiary of Tyson Foods, Inc. This acquisition brought about further concentration in global food supply and helps explain why Tyson Foods is the company with the highest profits.\footnote{127}{Renee Johnson, \textit{Recent Acquisitions of U.S. Meat Companies} (2009), available at http://www.nationalaglawcenter.org/assets/crs/RS22980.pdf.} In 2007, five firms, including Tyson Foods and Smithfield Foods, controlled 78\% of the cattle slaughter in the United States. To put this in larger context, by the beginning of this century, Tyson Foods supplied about twenty-five billion pounds of chicken, beef, and pork annually to McDonald’s, Wal-Mart, major supermarkets, and restaurant chains in the U.S, and at peak production Tyson Foods facilities can slaughter as many twenty-five million chickens in a single week.\footnote{128}{Id.; see also T. Rees Shapiro, \textit{Don Tyson, Politically Connected ‘Chicken King’ of Arkansas, Dies at 80}, Wash. Post, Jan. 6, 2011, http://www.washingtonpost.com/wpdyn/content/article/2011/01/06/AR2011010606160.html.}

Profit margins are lower in meatpacking than in other types of food manufacturing industries,\footnote{129}{See Karen Olsson, \textit{The Shame of Meatpacking}, Nation (Sept. 16, 2002), http://www.thenation.com/article/shame-meatpacking.} and meatpacking firms like other food processing companies have assiduously courted local government changes that have taken place in the meatpacking industry).
support, particularly in rural areas seeking economic development. In doing so, the companies play localities off each other in order to generate the greatest and longest tax abatements and subsidies and other favorable conditions in exchange for siting their processing plants. Also driving this “ruralization” is the desire by these massive corporations to minimize or avoid workforce unionization or organization.

Recent Latina/o immigrants are primary among those holding low-wage, non-unionized jobs working in U.S. agro-maquilas in rural or non-metropolitan areas and in regions not historically known for attracting Latina/o and other non-European immigrants. The traditional Latina/o immigration pattern has been to enter through gateway cities or regions in states such as New York, Texas, Florida, and California, and then generally to settle in or near that city or region. However, a new pattern has emerged over the past twenty years, whereby immigrants enter both through the traditional gateway cities and states and then head to secondary and rural areas such as Arkansas, Colorado, Georgia, Idaho, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Carolina, Oklahoma, Pennsylvania, South Carolina, and South Dakota. Some

131 See sources cited supra note 130.
133 Vargas, supra note 107, at 347.
134 Id. at 345–47.
of the migration is seasonal and/or circular in nature, some of it involves more permanent settling, depending upon job availability and other factors. Counties in these newer states for Latina/o migration have seen their Latina/o populations grow by 800 to 1000% over the past decade, and disperse across urban and rural areas. Today, there are over three million Latina/os in the rural Midwest alone. These shifts in Latina/o migration trends and patterns reflect structural changes in the meatpacking and food processing industries brought about by unprecedented consolidation, as well as vertical and horizontal concentration of those industries, which in turn have radically transformed agricultural processing and production in the United States from small, family owned farm labor into large-volume, high-profit, low-cost, labor-intensive industrial jobs in the meat processing industry. While the new immigrant workforce in the U.S. meatpacking plants has not supplanted the labor-intensive agricultural role of immigrant field workers, the increasing mechanization of agribusiness and the growth


of produce and staple crops in Mexico for United States wholesale and retail consumption continue to reduce the size of the migrant fieldworker labor force in the United States.  

Meatpacking plants search constantly for low-cost labor in immediate need of work; the six-month employee turnover rate can reach as high as 100%. Thus, local and even regional labor markets cannot possibly meet the demand for an ongoing stream of readily available, inexpensive workers to carry out difficult and dangerous work. Immigrants from Mexico and Central American nations, both documented and undocumented, meet this criteria; in some regions of the United States, the overall workforce in meatpacking plants may reach as high as 60% Latina/o.  

Typically anywhere between 200 to 500 workers work round-the-clock shifts to slaughter and process approximately 5000 cattle each day. Furthermore, although the carcass-cutting process is impossible to mechanize, carcass-cutters are paid only $7.00–8.50 per hour (approximately $15,000–20,000 per year, full-time) to perform arduous work amidst a variety of occupational health and safety risks. They are

140 Dalla et al., supra note 138.  
141 Compare Joel Dyer, Meatpacking Industry Has A Long History of Reliance on Immigrant Labor, Fort Collins Wkly. (Dec. 26, 2006), http://www.greeleytribune.com/article/20061226/NEWS/112230087, with Meat and Poultry, Rural Migration News (Apr. 1998), http://migration.ucdavis.edu/rmn/more.php?id=261_0_2_0 (“Poultry processing plants have very high turnover, giving some of the rural communities in which plants are located labor forces that include more migrants than many seasonal farming areas. The poultry industry as a whole has a turnover rate approaching 100 percent, meaning that the average worker in the typical plant lasts six months at that plant. Virtually all plants continuously post help-wanted signs.”).  
142 See Vargas, supra note 107, at 350; see Dalla et al., supra note 138, at 21.  
143 See Vargas, supra note 107, at 347.  
144 Gouveia & Stull, supra note 130, at 101.  
145 See D.S. Campbell, Health Hazards in the Meatpacking Industry, 14 Occupational Med. 351 (Apr. –June 1999) (“Workers in the meatpacking industry face many health risks. Musculoskeletal disorders, including both acute injuries and repetitive strain injuries, are the most commonly reported problem in these workers. Other health hazards include infectious diseases, skin and respiratory disorders, and problems caused by environmental stressors such
on their feet at least eight hours per day in a cold and wet workplace, standing on water and blood slicked bare cement while using machinery that is both sharp and powerful enough to cut quickly and repetitively through the raw flesh, muscle, tendon, and bone of hundreds of large, variously sized animals. Yet workplace remedies that are ordinarily available to U.S. citizens and authorized immigrant workers through human resources, occupational health and safety, and employment discrimination law are unavailable for undocumented and unauthorized immigrant workers.

New Latina/o immigrants coming to rural U.S. agro-maquilas also suffer from social distance from larger cities and host communities because of language barriers, low income, and low education levels. Differences in cultural practices tend to become flashpoints for intergroup conflict as exacerbated by a lack of affordable housing, residential doubling-up, and the use of evening hours (after work shifts) to gather outdoors rather than in single-family, Anglo-style living rooms. Add to this the anti-foreigner, anti-immigrant, and anti-

as cold, heat, noise, chemical exposures, explosions, fires, and work stress.


149 See Vargas, supra note 107, at 358.
Latina/o rhetoric and sentiments that dichotomize “Americans” (English speakers) from “foreigners” (non-English speakers or those who choose not to or do so secondarily, etc.) and “illegal immigrants” (those Latina/os and others, only some of whom actually happen to be immigrants, held under an array of popularized, stereotyped suspicions).  

C. Legal Issues Facing Noncitizen U.S. Agro-Maquila Workers

Latina/os comprise the majority of persons working in U.S. agro-maquilas, the U.S. meatpacking industry in particular; foreign-

150 Aoki & Shuford, Welcome to Amerizona, supra note 3, at 12 n.34. Anti-immigrant sentiment is fueled by “illegal immigration” anxieties, whereby “illegals” are stereotypically and erroneously blamed for stealing American jobs and benefits, funneling money out of the United States, not paying taxes, driving down property values, destroying neighborhoods and natural environs, and having no respect for the rule of law, let alone U.S. federal and state laws. See, e.g., Peter Brimelow, Alien Nation (1995); Patrick J. Buchanan, State of Emergency (2006); Patrick J. Buchanan, The Death of the West (2002); Victor Davis Hanson, Mexifornia (2003); Samuel P. Huntington, Who Are We? (2004); Michelle Malkin, Invasion (2002); John J. Miller, The Unmaking of Americans (1998); Arthur M. Schlesinger, Jr., The Disuniting of America (rev. ed. 1998). It is worth comparing this relatively recent spate of books advocating immigration restrictions with the immigration restrictionists of the early twentieth century, which premised their call for restrictions on an uneasy combination of white racial superiority and ’scientistic’ arguments on the inferiority and undesirability of nonwhite immigrants. See, e.g., Madison Grant, The Passing of the Great Race (1916); Lothrop Stoddard, The Rising Tide of Color Against White World-Wide Supremacy (1920). See also Kris W. Kobach, Reinforcing the Rule of Law: What States Can and Should Do to Reduce Illegal Immigration, 22 Geo. Immigr. L. J. 459 (2008) (arguing that, today, the fiscal burdens imposed by illegal immigration are acute throughout the United States and, as a result, many cities and states are, for the first time, exercising their authority to act); Kris W. Kobach, Attrition Through Enforcement: A Rational Approach to Illegal Immigration, 15 Tulsa J. Comp. & Int’l L. 153 (2008) (claiming that if a strategy of attrition through enforcement were implemented nationwide, it would gradually, but inexorably, reduce the number of illegal aliens in the United States); Kris W. Kobach, Defending Arizona, Nat’l Rev., June 7, 2010, at 31, available at http://article.nationalreview.com/437656/defendingarizona/kris-w-kobach; Kris W. Kobach, Why Arizona Drew a Line, N.Y. Times, Apr. 21, 2010, at A31; Julia Preston, Lawyer Leads an Immigration Fight, N.Y. Times, July 21, 2010, at A10.
Pastures of Peonage: Tracing the Feedback Loop of Food Through IP, GMOs, Trade, Immigration, and U.S. Agro-Maquilas

born persons from Mexico comprise the largest portion of U.S. agro-maquila Latina/o workforce members. Among those Mexican migrants working in the U.S. agro-maquilas, many enter the United States, without authorization or documentation, out of dire economic necessity and the impossibility of obtaining authorization to enter and work in United States via an outdated immigration regulation system with misaligned policy aims. Immigrants working in the U.S. agro-maquilas are regularly subject to abuse in the workplace, and federal government

151 See Vargas, supra note 107, at 350; see Dalla et al., supra note 138, at 21.
152 See Hufbauer & Schott, supra note 73, at 113; Philip Martin, Mexico-US Migration, in NAFTA Revisited 452–54 (Inst. for Int’l Econ., 2005). Over the past half-century, Mexico’s regional population distribution has completely flipped. In 1950, 57% of Mexicans lived in rural areas (2,499 people or less) within Mexico in 1950; just 25% lived rurally as of 2000. Conversely, by 2000, 61% lived in urban areas, up from just 26% in 1950, and 26% of Mexico’s population lives in its cities of 500,000 people or more. As a result of NAFTA and two decades of neoliberal economic reforms, by the late 1990s maquiladoras within Mexico provided the greatest growth in Mexican industry and job-creation. From 1990 to 2000, major border cities Ciudad Juárez, Tijuana, Mexicali, Chihuahua, Reynosa, Matamoros, Nuevo Laredo, and Nogales, all of which are home to maquiladora industries, grew by 44% from an aggregate population 3,591,965 to 5,175,335. Just as important as these urban shifts within Mexico along its northern border are the economically motivated migration of Mexican nationals to the United States and population dispersals therein. Roughly only 3% of the global population lives outside its country of origin, yet as of 2000 9% of Mexican nationals live and work in the United States. At least half of these persons are unauthorized residents in such fields as agriculture, construction, manufacture, and service. However, no less than 30% of Mexican nationals with formal sector jobs work in the United States, again working in many of those same fields. Availability of employment in the United States and the lack of available jobs in Mexico, including formal sector jobs, serve as primary “pulls” and “pushes” for Mexican nationals to live in the United States. See also Kevin R. Johnson, Ten Guiding Principles for Truly Comprehensive Immigration Reform: A Blueprint, 55 WAYNE L. REV. 1599, 1603 (2010) (noting that undocumented immigration, primarily from Mexico into the United States, is a function of economics, labor supply and demand, overly restrictive immigration law, and misaligned immigration policy).

harassment,155 and political dispossession. They have low access to and acquisition of social capital, and they have little-to-no protection of labor rights or from occupational health and safety hazards (e.g. exposure to pesticides, herbicides, workplace biohazards, and other food production-related toxins). Because border fences and other containment barriers serve to keep people “in” as well as “out,” the closure and increasing militarization of the U.S./Mexico border means that those who manage to enter the United States without authorization are not necessarily free to “self-deport.”156 Rather, they exist to contribute to the feedback loop described in this article.

There are many legal issues facing these new immigrants, but this article confines itself to just three: language barriers (affecting social capital access and acquisition);157 driver’s license availability (affecting the...
ability to work in the United States as well as eligibility for authorized entry or presence); and local enforcement of federal immigration law (affecting constitutional protections based not on citizenship status, but rather on “territorial personhood”).

First, with regard to language issues, it is estimated that more than half of all foreign-born persons in the United States have limited proficiency with spoken English, and that roughly sixty percent of foreign-born adults who have limited English proficiency (LEP) are recent immigrants. English language skill acquisition and availability of information and services in accessible languages for recent immigrants and other foreign-born persons affects everything from buying food to accessing information about school to receiving medical and dental care to conducting ordinary consumer transactions with banks and

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158 See Aoki & Shuford, (In)visible Cities, supra note 55.

159 For a fully developed discussion of the significance of the “territorial personhood” standard under U.S. constitutional law and immigration law, see HIROSHI MOTOMURA, AMERICANS IN WAITING: THE LOST STORY OF IMMIGRATION AND CITIZENSHIP IN THE UNITED STATES (2006).

160 Jeanne Batalova & Aaron Terrazas, Frequently Requested Statistics on Immigrants and Immigration in the United States, Migration Information Source (Dec. 2010), http://www.migrationinformation.org/feature/display.cfm?ID=818#2g (“In 2009, 52% of the 38.3 million foreign-born persons age 5 and older were limited English proficient (see infra note 161); practically the same as the share of 51% of the 30.7 million foreign-born persons age 5 and older in 2000.”).

161 Id. (The term “limited English proficient” refers to any person age 5 and older who reported speaking English “not at all,” “not well,” or “well” on their survey questionnaire. Individuals who reported speaking only English or speaking English “very well” are considered proficient in English.)


163 Vargas, supra note 107, at 360.
other merchants. While federal regulations enacted in June 2002 require state agencies that receive federal funding to provide meaningful access to persons who possess limited English language ability, official-English and English-only movements have attempted to pass state laws and local ordinances which target bilingualism (in education, public services, government business, etc.) and seek to establish English as the language of government. These efforts exacerbate problematic practices

164 See, e.g., Steven W. Bender, Consumer Protection for Latinos: Overcoming Language Fraud and English-Only in the Marketplace, 45 Am. U. L. Rev. 1027, 1029–30 (1996) (“As consumers, immigrants unable to understand English are left largely to the morals of the marketplace. Existing consumer protection regulation too often assumes that consumers are proficient in English or, if not, are accompanied in their transactions by an interpreter. Sadly, this gap in protection has made some Latino/as and other language minorities the victims of choice for unscrupulous merchants who prey on their inability to understand the terms of the bargain.”); see also Ramirez v. Plough, Inc., 863 P.2d 167 (Ca. 1993) (“Because both state and federal law now require warnings in English but not in any other language, we further conclude that a manufacturer may not be held liable in tort for failing to label a nonprescription drug with warnings in a language other than English.”).


166 See Vargas, supra note 107, at 360; Juan F. Perea, Demography and Distrust: An Essay in American Languages, Cultural Pluralism, and Official English, 77 MINN. L. REV. 269, 340–49 (1992) (detailing the genesis of the English Only movement). See also Ruiz v. Hall, 957 P.2d 984, 991 (Ariz. 1988) (in striking down a ballot initiative, “English as the Official Language,” to Arizona’s Constitution, the Arizona Supreme Court noted that enactment of the amendment “has severe consequences not only for Arizona’s public officials and employees, but also for the many thousands of persons who would be precluded from receiving essential information from government employees and elected officials in Arizona’s governments. If the wide-ranging language of the prohibitions contained in the Amendment were to be implemented as written, the First Amendment rights of all those persons would be violated.”) (citations omitted); William Bratton, Law and Economics of English Only, 53 U. MIAMI L. REV. 973 (1999); Antonio J. Califa, Declaring English the Official Language: Prejudice Spoken Here, 24 HARV. C.R.-C.L. L. REV. 293 (1989); Kevin R. Johnson & George A. Martinez, Discrimination by Proxy: The Case of Proposition 227 and the Ban on Bilingual Education, 33 UC-DAVIS L. REV. 1227, 1227–29 (2000) (“In 1998, the California voters, by a sixty-one to thirty-nine percent
in law enforcement, such as “racial profiling” searches and seizures or Terry stops-and-frisks of Latina/os who lack the ability to communicate effectively in English.\(^{167}\)

The second issue is driver’s license availability. In many U.S. regions where agro-maquilas are located, commuting to work via carpool or individual transportation is necessary because of the distance from home to work, the lack of rural public transportation,\(^{168}\) and the harsh

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\(^{168}\) Vargas, *supra* note 107, at 362; see also Sylvia R. Lazos Vargas, *Missouri, the “War on Terrorism” and Immigrants: Legal Challenges Post 9/11*, 67 MO. L. REV.
seasonal weather conditions in many of these regions. The so-called “welfare reform” measures adopted in states like Illinois and California in the mid-1990s made necessary the provision of a valid social security number in order to obtain a driver’s license. Though ostensibly this requirement was adopted in order to crack down on “deadbeat dads,” it has in fact adversely affected undocumented immigrants and other noncitizens without valid social security numbers in their ability to travel to work.

Then, the Intelligence Reform and Terrorism Prevention Act (IRTPA) of 2004 and the REAL ID Act of 2005 federalized driver’s license issuance. The latter also imposed a social security number requirement in addition to other national standards, and

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1683 (2002); Gouveia & Stull, supra note 130, at 96.
169 For example, 153 of the 2,983 meatpacking plants in the United States are private-owned companies with annual revenues in excess of $100 million. Of these plants, 93 are located in states and regions (e.g. Great Lakes, Ohio Valley, New England, Rocky Mountains, Great Plains) with high winter snowfalls and sub-freezing average temperatures, and another 50 are located in states and regions (e.g. Southeastern and Southwestern United States) where extreme heat and humidity are common in summer months. See Database of U.S. Meatpacking Plants, MANTA.COM, http://www.manta.com/mb_34_C300B_000/meat_packing_plants (last visited Jan. 31, 2012).
171 Vargas, supra note 107, at 362.
a driver’s license expiration that matched a visa’s expiration (or after one year, if the visa provided no specific expiration date). 175 State and federal immigration law work in tandem to amplify the legal effects on undocumented immigrants, as some states make it a felony to drive without a driver’s license or to provide false information to the registry in a driver’s license application. 176 The threat of deportation constantly hangs over undocumented immigrants—in 2010 nearly 41,000 were deported after apprehension related to lesser traffic violations, a significant increase over prior years. 177 The dramatic increase in deportation rates of undocumented immigrants following vehicular offenses could in turn encourage police profiling Latina/o drivers for Terry stops-and-frisks and/or searches and seizures. 178

proposals to re-issue social security cards with either cardholder photographic or biometric information).


177 Patrik Jonsson, More Illegal Immigrants Deported for Traffic Offenses. Problem for Obama?, The CHRISTIAN SCI. MONITOR, July 22, 2011, http://www.csmonitor.com/USA/Justice/2011/0722/More-illegal-immigrants-deported-for-traffic-offenses.-Problem-for-Obama (“Some 393,000 people were deported in the fiscal year that ended Sept. 30, 2010, about half of whom had committed crimes, according to an Associated Press analysis. The report, citing US Immigration and Customs Enforcement (ICE) data, stated that 27,635 people were deported after receiving drunken driving citations, compared with 10,851 in the last full year of the Bush administration. In addition, 13,028 people were deported for less serious traffic violations, three times the 4,527 who were deported two years earlier.”).

178 Id.
To compound matters, under *Sykes v. United States*, vehicular flight from police after being ordered to stop is a violent felony within the meaning of the Armed Career Criminal (ACCA). The language used in the ACCA to define “violent felony” closely resembles that of the “crime of violence” definition for “aggravated felony” under the Immigration and Nationality Act of 1988 (INA), the Antiterrorism and Effective Death Penalty Act of 1996 (AEDPA), and the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA). A person convicted of an aggravated felony under one or more of these acts may not become a U.S. citizen, subsequently enter or receive asylum in the United States, or have deportation orders cancelled without specific authorization from the U.S. Attorney General. Furthermore, a conviction for an aggravated felony is grounds for removal without judicial review. Should future courts happen to treat the ACCA’s “violent felony” category as coextensive with the “aggravated felony” definition under the INA, the AEDPA, and

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181 Antiterrorism and Effective Death Penalty Act of 1996 § 438 expands the category of aggravated felony under 8 U.S.C. § 1325(a) (relating to improper entry by an alien) and § 1326 (relating to reentry by a deported alien); § 442 “establishes a ‘conclusive’ presumption that an alien convicted of an aggravated felony is deportable.” 8 U.S.C. 1252a(c) (2011).
183 8 U.S.C. § 1227(a)(2)(A)(iii) (2006); Bill Ong Hing, *Deporting Our Souls: Values, Morality, and Immigration Policy* 57 n.18 (2006) (“The breadth of aggravated felonies has constantly expanded since the term was introduced in the immigration laws in 1988. See Anti Drug Abuse Act of 1988, Pub. L. No. 100-690, § 7344(a), 102 Stat. 4181, 4470–4471 (1988)”); Immigrant Legal Res. Ctr., *Good Moral Character and Statutory Bars to Eligibility, in Naturalization: A Guide for Legal Practitioners and Other Community Advocates* 6–21 (2002) (“What we may think of as relatively minor crimes—for example, selling $10 worth of marijuana, or ‘smuggling’ one’s baby sister across the border illegally—are aggravated felonies. Advocates must be very careful in advising clients!!! Old convictions count as aggravated felonies. Some people have been arrested during their naturalization interview because they had a very old conviction for an offense that turned out to be an aggravated felony.”).
IIRIRA, significant hardships may result for undocumented immigrants. For example, an undocumented worker who drives without a license and fails to pull over when ordered to do so (out of misunderstanding, fear of the police, threat of deportation, or confusion due to a language barrier) runs the twin risks of being deported without judicial review and of being forever prohibited from lawful U.S. entry.

The third issue demarcates a large cluster rather than a single issue but can be traced to the role of state and local government in the area of immigration regulation, including but not limited to the enforcement of federal immigration laws at subnational level as exemplified by cases such as *Lozano v. Hazleton* 184

184 *Lozano v. City of Hazleton*, 496 F. Supp. 2d 477 (M.D. Pa. 2007) (striking down city immigration ordinance on federal preemption grounds). See also *Lozano v. City of Hazleton*, 620 F.3d 170, 224 (3d Cir. 2010) (opinion announced on September 9, 2010, affirming the district court's finding of federal preemption with regard to Hazleton's employment provisions and housing regulations). In *Lozano v. City Hazleton*, 131 S. Ct. 2958 (2011), this judgment was vacated and case remanded for consideration after *Chamber of Commerce v. Whiting*, 131 S.Ct. 1968 (2011) (decided May 26, 2011, affirmed the district court and 9th circuit holding that AZ law that allowed suspension and revocation of business licenses was not impliedly preempted by federal law); see also *Chamber of Commerce v. Edmundson*, 594 F.3d 742, 750 (10th Cir. 2010) (holding that most of an Oklahoma law imposing sanctions of employers for employing undocumented immigrants was preempted by federal law). But see *Gray v. City of Valley Park*, 567 F.3d 976, 979–80 (8th Cir. 2009) (affirming district court judgment that a city ordinance similar to Hazleton's was not preempted by federal law); *Chicanos Por La Causa, Inc. v. Napolitano*, 544 F.3d 976, 980 (9th Cir. 2008) (holding that Arizona law denying business licenses to employers employing undocumented immigrants was not preempted by federal law) (amended and superseded on denial of rehearing in 558 F.3d 856, but same holding 861, 866-67).

Hiroshi Motomura attempts to rationalize how the spate of local ordinances such as ones in Escondido, California and Hazleton, Pennsylvania beg an important question: when localities enact these types of ordinances, are they simply implementing the underlying policies of federal immigration law? Hiroshi Motomura, Essay, Immigration Outside the Law, 108 Colum. L. Rev. 2037, 2062–64 (2008). In which case, there is not a preemption problem—in fact, they are usefully “amplifying” the reach of federal immigration law by multiplying the number of law enforcement persons working on immigration issues. However, this is only the case if federal immigration law is simple, easily implemented by localities, non-discretionary, and localities use and apply standards and rules taken directly from federal immigration law. On the other
and *U.S. v. Arizona*. The conventional wisdom might indicate that on controversial issues involving relatively powerless ethnic, racial, or linguistic minorities, the local or state level of government may be particularly distrusted because xenophobia and reactionary policies tend to be stronger and a nuanced understanding of immigration federalism weaker at this level. However, a number of legal scholars argue that we may need more, rather than less, local governmental involvement (including state, county, and municipal governments) in issues involving the regulation of immigrants as opposed to the regulation of immigration, which is a federal matter. The problem for immigrants employed by


agro-maquilas in rural areas across the United States is that they are acutely vulnerable: many of these workers do not even know that they have legal rights. Regional shortages in skilled immigration lawyers and civil rights groups that might represent them or advocate for their rights and interests, exacerbates their vulnerability.


189 Vargas, supra note 107, at 365.
IV. **CONCLUDING REMARKS: REIMAGINING THE FEEDBACK LOOP THROUGH PROGRESSIVE INTERVENTION AND INTERRUPTION OF THE CYCLE**

This article investigates the interaction of global agribusiness, economic globalization, and labor migration in North America, with specific focus on the United States and Mexico. Three interrelated phenomena are highlighted. The first is the rise of GMOs and global IP protection for GE food crops and other PGR. The second is the increasing horizontal and vertical concentration of the agricultural seed-and-chemical, food processing, and food sale industries. The third is the lack of fit between U.S. immigration law and policy, international finance and trade regimes, and the realities of labor migration as related to U.S. agro-maquilas.

A global feedback loop connects IP law regimes in agribusiness, macroeconomic changes, and labor migration. The rise of GE crops (protected by intellectual property and underwritten by treaties such as TRIPS) over the past twenty years fed into the consolidation of industries in the agricultural sector, leading to consolidation of former subsistence farms in countries such as Mexico into larger industrial farming operations. The seed and chemical industries increase horizontal and vertical concentration in the food supply system where GMOs—underwritten by IP law—have taken increasingly large market shares in staple crops such as corn, canola, and soybeans. GMOs also play significant roles in diminishing global crop diversity and increasing dependence on industrial monoculture crop, thus providing a powerful “push” factor. The demands from increased competition in both the wholesale and retail food industries—which mandates lower pricing along with increased standardization and shelf-life—are facilitated, shaped, and served by genetic manipulation and increasing industrialization at the seed- and-chemical stage of the food supply.

Vertical integration, which occurs via joint ventures and other agreements between industrial growers and grain and protein processing industries, provides a “pull” factor for cross-border labor migration in violation of national immigration laws. Subsistence farmers, driven off the land by the effects of macroeconomic processes and market liberalization under trade agreements like NAFTA, move to urban centers where
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Social safety nets have shrunk, due to structural readjustment policies and privatization dictated by the IMF and World Bank. Many of the rural dispossessed are pulled northward by the prospects of jobs in non-unionized, low wage agricultural industries in the United States: picking, processing, and packing produce and meat. These workers often enter the United States without documentation and are subject to abusive workplaces, state and federal government harassment, and political dispossession. Thus, the feedback loop forms a redundant cycle with troubling implications for farmers, labor, crop genetic diversity, national and regional economies, our global food supply, and much more.

This redundant cycle, the food feedback loop, may be reimagined via progressive intervention and interruption. But, just as this feedback loop is multi-scalar and crosses many jurisdictions, so too must any intervention be complex in vision, scope, and implementation. Consider, for example, the political difficulty of achieving any progressive immigration reform within the United States today, as the immigration debate remains deadlocked and drenched in anti-immigrant political sentiment.

Notwithstanding these substantial hurdles, there are several points in the feedback loop where stand-alone measures or, better yet, coordinated combinations of intervention and interruption may alleviate the pressures that turn this feedback loop into a disastrous redundant cycle. These include:

(1) Re-drawing IP laws and international treaties and trade agreements so that “poor people’s knowledge”¹⁹⁰ (such as subsistence farmers’ know-how) may be compensated and sustained, in situ food crop genetic diversity may be conserved,¹⁹¹ and decentralized crop management and

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¹⁹⁰ The World Bank, Poor People’s Knowledge: Promoting Intellectual Property in Developing Countries 85–87, 207–234 (J. Michael Finger & Philip Schuler eds., 2004) (highlighting the knowledge that poor people can commercialize).

technology may be harmonized. Promoting participatory plant breeding programs (including usage of open-source principles governing agreements from seed banks), decentralization (through public non-proprietary agricultural research), and *in situ* conservation of both seed germplasm and farmer knowledge¹⁹² may help to preserve plant genetic diversity and farmer tradition while also promoting farmer “know-how” as compensable intellectual property, thus allowing small/family farmers a fighting chance to stay on their land and stay in the game.

(2) Developing global antitrust law and/or strengthening domestic enforcement of antitrust laws,¹⁹³ and focusing on ways to alleviate the structural disadvantages that agricultural laborers face. The latter strategy might include efforts to foster alliances between agricultural laborers and those U.S. labor unions, such as dockworkers, that hold more powerful negotiating and organizing positions. Additionally, protecting agricultural laborers from forced arbitration of production contracts is important and could mark an expansion of fair trade practices, as well as consumer labeling and certification strategies, which have had some positive impact in differentiating markets in coffee, cocoa, flowers, and some foodcrops.¹⁹⁴

(3) Creating linkages between trade treaties (like NAFTA or TRIPS) and labor migration, with the ultimate goal of creating “races to the top” rather than the current “races to the bottom” in terms of inter-jurisdictional arbitrage for ever-decreasing levels of governmental labor and environmental regulations.


¹⁹³ For a discussion of domestic and global antitrust issues raised by the vertical and horizontal concentration occurring up and down the global food supply chain, see Keith Aoki, Food Forethought: Intergenerational Equity and Global Food Supply – Past, Present, and Future, 2011 Wis. L. Rev. 399, 447–55 (2011).

(4) Reimagining U.S. immigration law and policy to fit better with the realities of, and reasons for, cross-border labor migration. Ultimately there must be meaningful, substantive immigration reforms premised on allowing labor to migrate freely to where work is and on removing the stigma that irregular migrants (who perform manual and service-industry labor in U.S. agro-maquilas and elsewhere) bear from living and working in the “shadows” (which makes them especially vulnerable to exploitation and abuse). Furthermore, open borders between countries like Mexico and the United States for persons as well as goods may help to interrupt the one-way flow of resource extraction from south to north. If one assumes that one-way extraction of resources disrupts economies and society in general, then the more that exchange becomes fair, open, and reciprocal rather than “free,” tilted, and asymmetrical, the less economic disruption and thus less Mexican immigration to El Norte. Traditional farmers will be able to stay on their land and will not be forced to migrate northward as undocumented immigrants in search of work.  

Some telling figures draw attention to the importance of these issues, followed by a normative claim. The U.S. population represents less than 5% of the global population, yet Americans consume more than 30% of the world’s resources. Though Mexico has officially adopted the UN’s Multidimensional Poverty Index (MPI), which in 2010 replaced


the UN Human Poverty Index (HPI), the larger point is that poverty alleviation efforts and results remain uneven at best. The percentage of people worldwide who live at or below the extreme poverty line remains relatively stable. The United States has engaged in systematic activities that disrupt local economies, drive people in countries such as Mexico off rural land and into urban areas, encourage privatization and so-called “amenity migration” by U.S. citizens, and support crackdowns and other measures pursuant to structural adjustment imperatives from the World Bank and the IMF.

It hardly comes as a surprise, then, that many of those people who have had their livelihoods pulled out from under them and toward the United States would themselves migrate northward. Indeed, one might argue that many of these migrants are merely following the resources—their resources—that have been extracted and funneled north of the border. Many recent immigrants to the United States make this implicit argument, as they march with placards that say: WE ARE HERE BECAUSE YOU ARE THERE.


198 The extreme poverty line was commonly understood to be $1 per day, although it was increased in 2008 by the World Bank to $1.25 per day as based on 2005 purchasing power parity. See Jeffrey D. Sachs, The End of Poverty: Economic Possibilities for Our Time 20 (2005); Martin Ravallion et al., Dollar a Day Revisited, 23 World Bank Econ. Rev. 163–84 (2009); UNICEF, Poverty Reduction begins with Children 9 (March 2000), available at http://www.unicef.org/publications/files/pub_poverty_reduction_en.pdf (last visited Sept. 28, 2011).


200 Dennis Chin, We Are Here Because You Were There, Firm Blog (May 27, 2010), http://standing-firm.com/2010/05/27/we-are-here-because-you-were-there/.
In light of the arguments made herein, what kind of immigration rule should the United States have? To end on a provocative note, Americans and the U.S. federal government might consider this suggested immigration rule: the United States should be absolutely free to exclude the nationals of any country where the U.S. government, U.S.-based multinational corporations, or even U.S. based nongovernmental organizations have not engaged in activities such as resource extraction, military adventurism, and the like, that disrupt local economies, populations, natural environs, or ways of life.

See Aoki & Shuford, Welcome to Amerizona, supra note 3, at 62–68 (offering ‘immigration regionalism,’ which would include the participation of various stakeholders offering input in formulating rules and policies as regional solutions, as a potential solution to the federalism issue that states are confronted when passing ordinances to control the undocumented immigrant population entering their state).
Much of the early scholarship relating to the introduction of genetically engineered plants focused on the potential liability of farmers resulting from the contamination of neighboring fields. A second line of scholarship explored the trade-related implications of commingled export shipments and the United States-led World Trade Organization (WTO) challenge to the European Union’s approval regime. Meanwhile, adoption of biotechnology, both domestically and abroad (especially in South America), expanded at a rapid pace resulting in the development of a common law of biotechnology that seemingly placed the legal burden of segregation upon those seeking to exclude genetically engineered DNA from their product—a “fence-out” rather than a “fence-in” scenario. The StarLink genetically engineered corn litigation, and resulting multi-million dollar liability, did little to alter the prevailing view that conventional or organically produced crops must yield to their genetically engineered counterparts. A trio of cases in 2009 and 2010, however, rejected not only the assumed legal duty to “fence-out,” but forced the United States Department of Agriculture (USDA) to substantially reconsider its regulatory approach to new product approval. This represents a fundamental shift in the domestic legal status of genetically engineered crops during a period in which many in the biotechnology industry predicted increased expansion into international markets and new product approval.
Although these cases are unlikely to reverse the general trend toward increased use of genetic engineering in agriculture, collectively they have disrupted the acquiescence of the regulatory system, forced a reexamination of private responsibilities and potential liability for contamination and, perhaps more importantly, provided an opportunity for reconsideration of the impact of genetic engineering on the food supply chain.

I. **INTRODUCTION**

First commercialized in 1996, genetically engineered plants now constitute a majority of the corn, soybeans, and cotton grown in the United States. Worldwide acreage of genetically engineered plants also has grown, but remains far behind the United States in overall market penetration. For example, farmers in the United States planted 66.8 million hectares of genetically modified (GM) plants in 2010, more than 45% of the worldwide total of 148 million hectares devoted to GM production. Despite the popularity among domestic commodity agriculture producers, substantial resistance remains both in the United States and abroad (most notably in the European Union).

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2. In 2011, GM varieties constituted 90% of cotton acres, 94% of soybean acres and 88% of corn acres. See USDA ERS, supra note 1.


4. Id.

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Asia, and Africa), to the production and/or consumption of food products produced from genetically modified organisms (GMOs). As a result, complex methods to preserve the “purity” of non-GM agricultural products have developed in the marketplace, along with nascent liability rules to allocate responsibility for the commingling of GM and non-GM food and feed.

Much of the early scholarship on this topic explored the potential for farmer vs. farmer litigation among neighboring landowners resulting from the commingling of GM and non-GM products due to pollen drift. Popular theories advanced by legal scholars included trespass, nuisance (both private and public), negligence, and, in certain circumstances, even strict liability. Commentators sought to analogize fact patterns from

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8 A hybrid corn plant of normal size can produce up to 25 million pollen grains. T.A. Kiesselbach, The Structure and Reproduction of Corn 48 (1999). The actual flow of the pollen depends on several environmental factors such as wind direction, turbulence, and velocity. Melvin D. Jones & James S. Brooks, Okla. Agric. Experiment Station Technical Bull. No. 38, Effectiveness and Distance of Border Rows in Preventing Outcrossing in Corn 3 (1950). Viability of the pollen also depends on humidity and temperature, with corn pollen losing viability after two hours. V.S. Luna et al., Maize Pollen Longevity and Distance Isolation Requirements for Effective Pollen Control, 41 Crop Sci. 1551, 1555 (2001). Cross pollination may occur at a distance of up to 200 meters from the source. Id. at 1556.

historical cases in the agricultural context such as pesticide spray drift,10 animals running at large,11 weed control,12 or the storing of uncommon substances13 to the threats of GM pollen moving from field to field. An underlying issue among these hypothetical scenarios was the potential to disrupt not only the burgeoning organic food market (the National Organic Program does not allow for the use of genetically engineered seeds),14 but the infinitely more lucrative international trade in commodity agricultural products.15 The risk to the broader agricultural community was the potential for commingling of export-bound agricultural products with genetically engineered varieties not yet approved in the destination market—resulting in a rejected shipment and the potential closure of the market for all like commodities. These concerns generated a second wave of scholarship discussing the potential liability concerns and the validity of national bans on the importation of GM agricultural products with respect to WTO rules.16
In its simplest form, the legal issue underlying much of the debate concerning agricultural biotechnology is a question of duty—who has the duty to implement measures to ensure segregation between GM and non-GM agricultural products. Is it the duty of the individual implementing a novel technology to control the potential negative externalities of their actions? Or is it the responsibility of the individual seeking to earn a higher market price for non-GM products to take measures to prevent the commingling that would destroy the expected returns? In other words, should the law adopt a theory of “fence-in” whereby the farmer adopting GM technology has a duty to eliminate potential pollen drift or other externalities such as commingling during later stages in the supply chain, or a “fence-out” rule in which the farmer seeking to produce a specialized crop must take responsibility to prevent pollen drift from neighboring fields as well as other segregation measures from farm to fork.

While legal scholars explored the theoretical implications of this transformative technology and the potential impact on rural development and the environment, countless individual farmer transactions played out over the course of several growing seasons. In a scenario reminiscent of Professor Ellickson’s foundational work regarding livestock rules in *Order Without Laws*, the commodity agricultural community acquiesced to a

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17 This assumes there is an underlying desire for coexistence in the marketplace—that is that the individual farmer should have the ability to select their desired form of crop production (GM or non-GM) and produce a crop at harvest that meets the technical requirements for sale into the respective markets. For one commonly used definition of coexistence, see European Commission Recommendation 2003/556 On Guidelines for the Development of National Strategies and Best Practices to Ensure the Coexistence of Genetically Modified Crops with Conventional and Organic Farming, art. 1.1, 2003 O.J. (L189) 36, 39, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:189:0036:0047:EN:PDF defining coexistence as “the ability of farmers to make a practical choice between conventional, organic and GM-crop production, in compliance with the legal obligations for labeling and/or purity standards”.


general principle of “fence-out.” Although there may be several theoretical reasons for this response based on economic efficiency arguments, this line of analysis is beyond the scope of this article and is the subject of an ongoing empirical investigation.

What is evident at this stage, however, is that, from a political economy perspective, several powerful agricultural interests aligned with general governmental interest that was agnostic at best, and in some respects hostile to the facilitation of a coexistence strategy to encourage the simultaneous domestic production of both GM and non-GM agricultural products. As explored in greater detail in Part II of this article, the federal government did little to support the continued production of non-GM products to meet domestic and international demand, instead focusing energy on reversing export nation restrictions on GM products. This was in alignment with the priorities of a commodity grain handling system ill-suited to segregate large quantities of GM and non-GM grain and oilseeds. Moreover, to the extent adoption of GM technologies reduced labor and management inputs at the farm level, interest groups representing farmers adopted positions strongly favoring GM production.

The default “fence-out” rule, not surprisingly, engendered substantial resistance from other sectors of the agricultural community, consumer groups and advocacy organizations. The first “chink” in the biotech armor, however, was a self-inflicted wound, the ramifications of which continue in substantial litigation that is ongoing at the time of this writing. Specifically, the commingling of the regulated (unapproved) GM StarLink corn variety with corn (both GM and non-GM) approved for human consumption resulted in a billion-plus dollar liability20 and, more importantly, was the first reported case to question the “fence-out” rule. The StarLink court held that pollen drift, as well as post-harvest commingling of regulated GM grain, constituted a physical injury thereby surviving a challenge based on the economic loss rule.21


The ongoing litigation involving a similar commingling of unapproved rice and the resulting loss of rice export markets at the close of the last decade further opened the crack in the “fence-out” default rule. Part III will further explore the development of the common law of agricultural biotechnology in light of these two landmark cases.

Part IV returns to the role of government, specifically, the USDA’s Animal and Plant Health Inspection Service (APHIS) to regulate biotechnology and foster coexistence. For decades, the USDA has promoted the concept of “get big or get out” and exhorted farmers to plant “fencerow to fencerow” in an effort to maximize agricultural production as measured by yield per acre. Genetic engineering technologies fit nicely into this high-input, high-output scenario. Farmers seeking to retain non-GM production methods, whether conventional or certified organic, were viewed as on the fringe and warranted little attention. Coexistence, according to the APHIS, was a matter for the market to sort out; once the agency approved a new genetically engineered variety for commercialization, it was up to the plant breeder to determine the commercialization strategy and any production restrictions. A trio of cases in 2009 and 2010, however, rejected USDA’s regulatory approach and forced the agency to substantially reconsider new product approvals and the attendant impact on non-adopters. This represented a fundamental shift in the domestic legal status of genetically engineered crops during a period in which many in the biotechnology industry assumed, instead, an increased expansion into international markets and new product approval. Moreover, the change in administration ushered in a new Secretary of Agriculture, generally supportive of coexistence measures. Abandoning the “get big or get out” doctrine of years past, Secretary Vilsack adopted

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a public stance of “two sons”—large commodity agriculture and specialty crops—both deserving of USDA support.  

This change in regulatory approach, both court ordered and policy motivated, coupled with two substantial cases assessing private liability for coexistence failures, have forced a reexamination of private responsibilities and potential liability for contamination by genetically engineered plants. Accordingly, this article concludes in Part V with a discussion of potential changes to this evolving common law of biotechnology.

II. The Early Years: Initial Approaches to Biotechnology Liability

A. Private Sector Liability

Pollen moves. This is an undisputed fact of nature and an essential element of agricultural production. Whether via wind, bees, or other means, the movement of pollen within and among farmers’ fields has the potential to alter the genetic properties of the harvested crop. Farmers are well aware of this fact and have developed production methods to account for this natural phenomenon. For example, farmers growing plants for seed purposes, rather than direct consumption as food or feed, must maintain higher purity standards than other farmers in order to meet the requirements of the various federal and state seed acts. Accordingly, these farmers tend to concentrate in certain areas and closely cooperate to minimize segregation costs such as setbacks or buffer zones from potentially incompatible crop varieties.

But outside of the special seed production context, the vast majority of farmers assess their growing practices based not on genetic purity, but rather profit maximization via a relatively simple formula comprising of input costs of seed and fertilizer (assuming land is a fixed cost across production options), expected yield per acre, and expected

\[ \text{Profit} = \text{Expected Yield} \times \left( \text{Price per Unit} - \text{Cost per Unit} \right) \]


25 See id. at 135-40.
price. As farmers are price takers for production inputs and outputs, yield per acre is the driving force behind annual farm profitability. Segregation costs that potentially reduce yield per acre, therefore, are a key component of the profit maximization equation for the average farmer. The simplest example of a segregation cost impacting yield per acre is the requirement to implement a buffer zone (or setback) as an isolation distance between GM and non-GM production.

For example, if ten feet are required to minimize pollen flow between two cornfields—one of which is GM and the other is non-GM—which farmer must “sacrifice” the ten-foot strip of land? If the non-GM farmer must implement the buffer zone (a fence-out rule), the farmer must segregate the harvest into two supply chains: the non-GM supply chain for the majority of the harvest and the commodity-grade GM supply chain for the crops grown in the ten foot strip. To commingle both areas of the farm would result in the entire harvest being designated as commodity-grade, resulting in the loss of the expected higher sale prices. On the other hand, if the GM farmer must implement the buffer zone to facilitate coexistence (a fence-in rule), the GM farmer must plant two varieties of corn, the GM variety in the majority of the field and a non-GM variety in the ten-foot strip adjacent to the non-GM neighbor. At harvest, however, the GM farmer may direct the entire crop into the commodity-grade GM supply chain. Even assuming there is no yield difference, there are management costs incurred by the individual responsible for implementing the segregation measures.

It would be inefficient for the farmers to split the difference and each plant a five-foot buffer as both would then incur the management costs (although they would share equally in any yield differential). Thus, if left purely to market forces, a joint responsibility for implementing the buffer is an unlikely result. On the other hand, neither side, as a rational economic actor, has an incentive to sacrifice potential profits for the economic benefit of their neighbor. Therefore, the question of duty within the fence-in, fence-out context arises as an important issue of agricultural law.

As noted above, initial scholarship in this area explored potential causes of action for pollen drift such as trespass, nuisance, negligence, and

26 See Jean-Paul Chavas et al., An Economic Analysis of Corn Yield, Corn Profitability, and Risk at the Edge of the Corn Belt, 26 J. AGRIC. & RESOURCE ECON. 230, 231 (2001).
strict liability. Agricultural law has a long history of resolving conflicts over land use activities with negative externalities. Although the pollen drift scenario is a post-GM construct, historical rules regarding pesticide spray drift or animals running at large provide a logical corollary. For example, in the pesticide context, states generally provide causes of action based on negligence\(^\text{27}\) or strict liability\(^\text{28}\) for harm to crops resulting from the drift of pesticide applications to neighboring farms. Drifting DNA that renders a crop unmarketable (or marketable at a lower price) could follow similar legal reasoning.\(^\text{29}\) Rules regarding animals running at large present a similar case. Although initially proposed in the intellectual property context as a possible defense to infringement actions due to the inadvertent presence of genetically engineered DNA protected by a utility patent,\(^\text{30}\) the law of animals running at large provides that owners of straying animals are subject to liability for the harm caused to others\(^\text{31}\)—commonly claims for reimbursement for trampled crops. A similar right could accrue to “wandering” plant DNA that causes damage to non-GM crops.

The potential inappropriateness of an activity to the area in which it is carried out is another common law construct\(^\text{32}\) with potential application in an era of GM cultivation. Although a factor in the determination of what is an “abnormally dangerous activity,” similar reasoning is employed in the nuisance context whereby a change in existing land use infringes on a neighboring individual’s ability to use property in the desired manner—e.g., producing non-GM crops.\(^\text{33}\) If the offending activity would result in a change in production practices, e.g., change from

\(^{27}\) See, e.g., Bennet v. Larsen Co., 348 N.W. 2d 540, 547-48 (Wis. 1984).


\(^{29}\) See Grossman, Biotechnology, supra note 9, at 233-34 (discussing pesticide drift in the nuisance context). Although not a pesticide spray drift case, the court in Jost v. Dairyland Power Cooperative found a coal-fired power plant liable for nuisance for discharging chemicals that injured neighboring crops. 172 N.W.2d 647 (Wis. 1967).

\(^{30}\) See Kershen, supra note 9, at 600-608.

\(^{31}\) See id. at 602 (discussing application of animals running at large compensation rules).

\(^{32}\) See Restatement (Second) of Torts § 520(e) (2010).

\(^{33}\) See Grossman, Biotechnology, supra note 9, at 233-34 (discussing nuisance within the context of pollen drift).
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non-GM to GM, and the surrounding community produced exclusively non-GM, this activity could be construed as inappropriate within the established land use pattern. This argument, however, has lost some force due to the ubiquitous nature of GM crops in many agricultural areas. However, in areas dominated by specialty crop production or in the event of the release of a heretofore non-biotech plant (e.g., GM wheat) into a production area dominated by non-GM production, these approaches to liability may have increased relevance.

B. Government Involvement in Coexistence

For most of agricultural biotechnology’s first decade of commercialization, governments, with few exceptions, remained silent on the issue of coexistence and the fence-in, fence-out debate. A few counties banned GM cultivation, while other states implemented rules prohibiting any local government involvement in planting decisions—presumably to support GM production. Meanwhile, disputes surrounding pollen drift or other potential sources of commingling did not reach the courts. In the absence of a higher authority (e.g., court, regulation) the agricultural community adopted a general principle of “fence-out.” Academic scholarship in the disciplines of both law and applied economics has yet to fully analyze the underlying economic rationalization for the adoption of this rule. Unfortunately, a more complete discussion of this question is beyond the scope of this particular article. But a law and economics framework is only one of many approaches to analyzing the

35 Id. at 219-220.
36 At the time of writing there were no reported decisions addressing the commingling issue. There may have been unreported private settlements between parties.
37 See Kershren, supra note 9, at 592-600 (raising the fence-in/fence-out dichotomy within the context of genetically engineered crops); A. Bryan Endres, Coexistence Strategies, the Common Law of Biotechnology and Economic Liability Risks, 13 Drake J. Agric. L. 115, 144 (2008) (discussing fence-out presumption).
38 But see Ellickson, supra note 19 (analyzing the resolution of compensation for animals running at large in the absence of a regulatory regime).
development of an initial fence-out rule. A simplified political economy model incorporating public sentiment, industry engagement, structural factors of agricultural production, comparative trade advantages and historical institutional philosophy provides substantial insight into the development of the fence-out policy.

Biotechnology policy at the federal level has largely followed a course favored by the industry—limited regulation to assuage public concern coupled with public support at the domestic and international level.\(^{39}\) Moreover, many argue that a revolving door between the biotech industry and the key regulators ensured a robust, pro-GM voice in the regulatory debate.\(^{40}\) Although this alone could account for a government unlikely to stake out a strong position in favor of a fence-in rule that imposed coexistence costs on the GM producer, other compelling structural issues inform the government’s permissive approach.\(^{41}\)

Prakash and Kollman note that public sentiment is a key element in the agenda-setting process of democracies. Polling data from 1999, just 3 years after the commercial introduction of most biotech crops, reveals domestic support for biotechnology was at 78%, while support in various member states of the European Union, a jurisdiction with a fence-in approach, topped out at just over 50% with support in some member states in the 30% range.\(^ {42}\) It is important to note that the EU in this time period had witnessed several food safety scares—mad cow disease, dioxin in poultry, foot and mouth disease—and trust in the government’s ability to protect the food supply was at a low point.\(^ {43}\) Thus from an

\(^{39}\) See Aseem Prakash & Kelly L. Kollman, Biopolitics in the EU and US: A Race to the Bottom or Convergence to the Top?, 47 Int’l Stud. Q. 617, 624 (2003).


\(^{41}\) See Graff et al., The Political Economy of Agricultural Biotechnology Policies, 12 AgBioForum 34, 35-36 (2009), available at http://www.agbioforum.org/v12n1/v12n1a04-graff.htm (arguing that “capture theory” provides too narrow of an explanation for the development of complex biotechnology policy).

\(^{42}\) Prakash & Kollman, supra note 39, at 627.

\(^{43}\) See David Vogel, The Hare and the Tortise Revisited: The New Politics of Consumer and Environmental Regulation in Europe, 33 British J. Pol. Sci. 557, 569 (2003); C. Ford Runge et al., Differing U.S. and European Perspectives on GMOs: Political, Economic and Cultural Issues, 2 The Estey Centre J. of Int’l L. and
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agenda setting perspective, there was little public support to engage in a restrictive regulatory process in the United States.

The structure of the agricultural sector also provides a key explanation for the farm community’s strong support for genetic engineering technology. In the latter half of the 20th century, U.S. farming became industrialized, concentrated, and assumed a major role in export commodities. Increased competition from Brazil and China, with lower input costs (land, labor), has forced domestic farmers to rely on large-scale operations and the latest technology to maximize production on a per-acre basis. Biotechnology fits well into this new rural landscape as the use of GM seeds minimizes management and labor costs as weed and pest control is either embedded within the plant (e.g., pest resistant corn, cotton) or the plant is made tolerant to a broad-spectrum herbicide (e.g., herbicide tolerant soybeans, canola) that allows for non-selective herbicide applications. This allows a single farming operation to manage larger tracts of land before reaching a limit on managerial capability.

It is interesting to note that these structural factors are not as dominant in the European landscape where there are more intense restrictions on GM crops and a general “fence-in” rule. Farms tend to be smaller, restricted by the amount of available land for cultivation rather

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45 Prakash & Kollman, supra note 39, at 627.

46 See Prakash & Kollman, supra note 39, at 627-28.
than management capacity, and there is a strong push for the multi-
functionality of farmland to provide biodiversity, recreation, and other
ecosystem services in addition to food production.\textsuperscript{47} Anecdotal evidence suggests that these same factors tend to characterize farms maintaining
non-GM production methods in the United States, perhaps indicating
that farmland size is a key component of support for genetically engineered
technologies.\textsuperscript{48}

Moreover, as domestic universities and private companies
developed a comparative advantage and eventual market domination in
biotech innovation,\textsuperscript{49} U.S. regulators had little incentive to implement
restrictive measures that would close the innovation gap between
the United States and competing agricultural markets, especially the
European Union. As a result, the federal government did little to support
the domestic production of non-GM products to meet residual domestic
and segregated international demands. Rather, the government focused its
energy on reversing export nation restrictions on GM product.\textsuperscript{50} This was
in alignment with the priorities of a commodity grain handling system
that was ill-suited to segregate large quantities of GM and non-GM grain
and oilseeds.

\textsuperscript{47} See generally Michael Cardwell, \textit{Multifunctionality of Agriculture: a European
Community Perspective}, in \textit{AGRICULTURE AND INTERNATIONAL TRADE: LAW,
POLICY AND THE WTO} 131, 131-147 (Michael Cardwell et al. eds., 2003)
(discussing the multi-functionality of the Common Agricultural Policy in the
European Union).

\textsuperscript{48} See generally Kym Anderson et al., \textit{Trade, Standards, and the Political Economy of
Genetically Modified Food} 3-4 (World Bank Pol’y Res. Working Paper No. 3395
ContentServer/IW3P/IB/2004/09/14/000009486_20040914111306/
Rendered/PDF/wps3395Standards.pdf.

\textsuperscript{49} Graff et al., \textit{supra} note 41, at 41 (contrasting the development of the
biotechnology industry in the United States with the chemical industry in the
European Union).

\textsuperscript{50} See Craig Stapleton, \textit{France and the WTO Ag Biotech Case}, Wikileaks (Dec. 14,
retaliation for the European Union’s reluctance to approve importation of GM
crops from the United States); \textit{Agricultural Biotechnology: WTO Case on
Biotechnology}, OFFICE OF THE U.S. TRADE REP. (September 2006), \textit{available at}
wtocase.pdf.
But, more importantly, the agency’s view toward regulation of biotechnology fits into the USDA’s historical approach to support large-scale commodity agriculture. Secretaries over the years preached the mantra of “get big or get out” and exhorted farmers to eliminate setbacks and to plant “fencerow to fencerow.”

When considering the multiple missions of the USDA, three areas stand out: production, food safety, and environmental stewardship. Of those three, promoting agricultural production dwarfs the USDA’s other constituents. Within the subset of “production,” the USDA includes initiatives to increase quantity, enhance quality, and support rural economies—all admirable goals, but with an overarching focus on quantity, there was little room for coexistence measures that might complicate matters for the farmer growing GM crops.

In sum, the combination of a lack of public concern in the biotechnology debate, coupled with extensive industry engagement, both external and internal to the government, set the agenda for a regulatory approach that welcomed genetic engineering technologies. The structural considerations of domestic farms (i.e. relatively large tracks with opportunities for expansion limited not by land, but management costs), prompted early farmer support for biotechnology and facilitated competition with other commodity exporting nations. The comparative advantage of the domestic biotechnology industry relative to the chemical input industry provided additional motivation for a supportive regulatory environment. Finally, the USDA’s historical push for increased scale-efficiencies in agricultural production meshed well with the agronomic benefits associated with biotechnology. As a result, the federal government remained relatively silent on the issue of coexistence and offered no formal opinion on the fence-in, fence-out debate.

III. PRIVATE LAW LITIGATION: CORN AND RICE

Although initial government efforts related to coexistence deferred to the individual market transactions that evolved into a general

51 See supra text accompanying note 22.
perception that “fence-out” would be the default rule, two significant court cases involving genetically engineered crops—StarLink corn and Liberty Link Rice—have altered drastically the heretofore impenetrable pro-GM liability rules. *StarLink* resulted in what some commentators have estimated to be more than a billion dollars in liability to the seed developer as a result of compensation paid to farmers for lost profits and export markets and to food companies for the expenses of product recalls and subsequent testing. The litigation involving Liberty Link Rice is ongoing as of this writing, with initial test cases resulting in significant damage awards for farmers in what could surpass the total payments in the *StarLink* case. The discussion below further describes these two GM contamination events and the precedent-setting cases.

**A. StarLink Corn Litigation**

In 1997, the EPA issued an experimental use permit to Aventis, the developer of the StarLink corn variety, for planting up to 3,305 acres.\(^5^3\) In 1998, the EPA authorized cultivation on 120,000 acres,\(^5^4\) but did not grant a pesticide residue tolerance for the novel protein in the corn variety (or exemption from a required tolerance) that would allow for consumption as human food.\(^5^5\) The agency did, however, grant an exemption from a pesticide residue tolerance for animal feed and animal byproducts.\(^5^6\) In sum, the EPA approved StarLink for animal but not human consumption. The EPA issued similar limited approvals for the 1999 and 2000 growing seasons along with the requirement for a 660-foot buffer zone between StarLink and other corn varieties.\(^5^7\) Despite these restrictions, StarLink corn varieties contaminated the domestic food supply resulting in extensive product recalls, loss of export markets, extensive testing requirements and a precipitous drop in corn prices.\(^5^8\)

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54 Certain Companies; Approval of Pesticide Product Registrations, 63 Fed. Reg. 43,936 (Aug. 17, 1998) (limiting the total acreage to 120,000).


56 *Id.*

57 *See* Uchtmann, *supra* note 21, at 185.

58 *Redick,* *supra* note 20, at 130.
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In a nationwide class action on behalf of corn farmers, the court held that pollen drift, as well as post-harvest commingling during transportation or storage, constituted a physical injury sufficient to survive a challenge under the economic loss doctrine.\(^59\) The defendant crop developer had a duty to prevent the regulated crop from entering the food supply (a fence-in obligation) that was breached and resulted in contamination of the corn supply.\(^60\) As a result, the plaintiff farmers’ claims for negligence\(^61\) and nuisance\(^62\) could proceed. Aventis subsequently settled this case for $110 million.\(^63\) Dollar amounts of other settlements were not released to the public.

The impact of the StarLink case extended beyond the direct liability assessed to Aventis—it placed the biotechnology industry on notice that courts would recognize the importance of coexistence measures (at least when mandated by EPA registration requirements) and that both pollen drift and post-harvest commingling of GM and non-GM corn was a “contamination” that rose to the level of a physical injury.\(^64\) However, as the only reported case finding liability for GM crop contamination, the precedential weight of this case remained in question. The 2008 contamination of the domestic rice supply with unapproved GM varieties, however, provided another opportunity to refine private law liability rules for biotechnology.

**B. Liberty Link Rice Litigation**

In June 2006, Riceland Foods notified Bayer CropScience (Bayer)—the successor in interest to Aventis (the entity responsible for StarLink)—of its discovery of genetically engineered rice in the 2005

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60 Id. at 843.
61 Id.
62 Id. at 847.
64 In re StarLink Corn Prods. Liab. Litig., 212 F. Supp. 2d at 841-43 (holding that non-StarLink corn crops suffer damage when pollinated by StarLink corn and that adequately states a claim for damage to property).
rice harvest.65 The USDA previously had approved two varieties of GM rice for commercial release—LLRice06 and LLRice62—but elected not to market these products due to a lack of grower interest and resistance from major rice importing nations such as Japan and the EU.66 What was troubling was that the variety found in the rice harvest was LLRice601—a variety for which Bayer had not yet petitioned the USDA for commercial approval. The USDA subsequently announced the commingling of the Rice harvest with this unapproved variety,67 precipitating an immediate decline in rice futures, the recall of US rice from grocery shelves in the EU, and the filing of multiple lawsuits in the US.68 The Judicial Panel of Multi-District Litigation transferred many of the pending LLRice601 complaints to the Eastern District of Missouri.69 An estimated 11,300 rice producers filed claims against Bayer in state and federal courts.70

Ruling on motions for summary judgment, the court allowed claims for negligence and private nuisance to proceed to trial—rejecting defendant’s argument that the low level presence of GM rice was permissible due to the USDA’s proposal to allow the adventitious presence of GM materials within the food/feed supply chain and the USDA’s exercise of

enforcement discretion not to fine Bayer for the unauthorized release. Rather, the court found that Bayer had a duty to ensure the regulated GM crops did not escape and contaminate other rice fields during field trials.

In the *StarLink* case, the court held that pollen drift and post-harvest commingling constituted physical harms sufficient to survive a challenge under the economic loss doctrine. However, the court applied the economic loss doctrine to bar claims by farmers who unknowingly purchased seed containing traces of *StarLink*; theoretically, those individuals could have negotiated contractual protection from their seed suppliers, but rather assumed the risk of proceeding without a warrant. The court in the GM rice case, however, extended the ruling in *StarLink* and allowed claims by farmers who purchased contaminated seed. Although the *LLRice601* plaintiffs purchased seed contaminated with unapproved rice varieties, they did not purchase it from the defendant, Bayer, and the harvested crop was “injured by Bayer’s negligent contamination of the nationwide rice supply,” rendering the economic loss rule inapplicable to farmers with contaminated seed stocks.

A series of test cases subsequently proceeded to trial, resulting in substantial verdicts for the farmer plaintiffs. In the first federal case, a jury awarded two Missouri farmers approximately $2 million in compensatory damages for the economic loss arising from the contamination of the rice supply. Three farmers from Arkansas and Mississippi obtained a $1.5

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71 *In re Genetically Modified Rice Litig.*, 666 F. Supp. 2d 1004, 1021-22 (E.D.Mo. 2009) (summary judgment ruling for Missouri farmer-plaintiffs); see also *In re Genetically Modified Rice Litig.*, No. 4:06MD1811 CDP, 2009 WL 4801399, at *10 (E.D.Mo. Dec. 9, 2009) (summary judgment ruling on claims filed by Arkansas and Mississippi farmer-plaintiffs allowing claims for negligence and private nuisance to proceed to trial). In 2007, USDA initiated a review and proposed change in existing regulations to allow for the adventitious presence of regulated GM material at low levels. *APHIS Policy on Responding to the Low-Level Presence of Regulated Genetically Engineered Plant Materials*, 72 Fed. Reg. 14649 (proposed Mar. 29, 2007) (no further action). As of this writing, the agency has not taken further action on the proposal. Despite the contamination to the rice supply chain, the USDA determined not to pursue enforcement actions against Bayer. See U.S. DEP’T AGRIC. *supra* note 65.

72 *In re Genetically Modified Rice Litig.*, 666 F. Supp. 2d at 1021-22.

73 *In re StarLink*, 212 F. Supp. 2d at 842.

74 *Id*.

75 *In re Genetically Modified Rice Litig.*, 666 F. Supp. 2d at 1016-17.

76 Redick & Endres, *supra* note 66, at 2.
million federal verdict a month later. In April 2010, 14 farmer-plaintiffs obtained a state verdict of approximately $6 million in compensatory damages and $42 million in punitive damages. An informal survey of jury verdicts and settlements with farmers indicated an average compensatory damage award of over $434,000. In July 2011, Bayer CropSciences agreed to a $750 million settlement of the pending federal claims to compensate the long-grain rice farmers for damages arising from the LLRice601 contamination. This settlement offered to farmers is approximately seven times the total amount in the StarLink corn litigation.

C. Impacts

The StarLink and LibertyLink Rice cases firmly established the viability of common law negligence and nuisance claims for damages arising from the commingling of food/feed supply chains with GM products not yet approved for general commercial release. It is important to note that both of these cases involved some aspect of regulatory violation in which the defendants were under a regulatory duty to “fence-in” the genetically engineered variety. In the StarLink corn case, the seed developer failed to segregate the GM variety from the food supply chain according to the EPA pesticide registration conditions. Similarly, in the LLRice601 litigation, Bayer did not have USDA authorization.

77 Id.
81 Id.
82 In re StarLink, 212 F. Supp. 2d at 835.
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for the commercial release of the novel GM variety. Although the USDA did not take enforcement action against Bayer for its failure to fence-in the experimental seed, there nonetheless was a regulatory violation. The unresolved issue, and one not yet addressed by any court, is whether contamination by a GM variety with both USDA and EPA approval could sustain a negligence or private nuisance claim.

IV. A Shifting Agency Approach to Genetically Engineered Plants?

The private litigation and resulting liability did not deter the USDA’s generally supportive approach to commercialization of new genetically engineered plants. Rather, the agency maintained its position that plants developed through genetic technologies were substantially equivalent to their non-GM counterparts and that market-based considerations outside the agency’s purview would determine the extent of coexistence in the United States. Coexistence measures to minimize economic loss or liability remained the responsibility of the agricultural industry, not the government. However, the agency’s initial attempt to deregulate genetically engineered alfalfa and the ensuing litigation forced the agency to revise this laissez faire approach.


84 In Sample v. Monsanto, 283 F. Supp. 2d 1088, 1092-94 (E.D. Mo. 2003), the court dismissed plaintiffs’ generalized claims for negligence and nuisance because they admitted there was no physical commingling to physical damage to the plaintiffs’ crops, but rather a general commingling that impacted the corn export market.


A. GM Alfalfa Litigation Forces Change in USDA Regulatory Review

The developers of GM alfalfa, Monsanto Co. and Forage Genetics International, petitioned the USDA to deregulate their new product in 2004. As the first perennial, genetically engineered crop in the United States, the agency’s subsequent granting of the petition engendered substantial opposition. In 2006, a coalition of alfalfa farmers, seed producers, and NGOs challenged the agency’s deregulation petition, securing an injunction against future planting of GM alfalfa pending the agency’s completion of a full environmental impact statement (EIS) rather than the more limited environmental assessment (EA) used to justify deregulation. Although the Supreme Court later reversed this injunction, the underlying deficiency in the agency’s initial EA with respect to coexistence measures survived the appellate process. In sum, the California Federal District Court, affirmed by the Ninth Circuit, rejected the USDA’s refusal to consider the potential economic impacts of pollen drift or other environmental externalities suffered by non-GM farmers resulting from deregulating the new genetically engineered crop. Relying on the National Environmental Protection Act’s (NEPA) procedural requirements, the Court ordered the USDA to take a hard look at its nearly twenty-year old “fence-out” default rule with respect to the coexistence burden. Merely concluding that it is the responsibility of the non-GM producer to implement a coexistence plan without identifying any methods to prevent cross-pollination would no longer

88 Monsanto Co. and Forage Genetics International; Availability Determination of Nonregulated Status for Alfalfa Genetically Engineered for Tolerance to the Herbicide Blyphosate, 70 Fed. Reg. 36,917 (June 27, 2005).
90 Monsanto Co. v. Geertson Seed Farms, 130 S.Ct. 2743 (2010).
91 Geertson Seed Farms, 2007 WL 518624, at *12, aff’d Geertson Seed Farms v. Johanns, 570 F.3d 1130 (9th Cir. 2009).
92 Id.
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survive judicial scrutiny.93 In fact, a similar coalition successfully sued the USDA on similar grounds with respect to genetically engineered sugar beets—a case that is ongoing at the time of this writing.94

The District Court’s admonishment of the USDA’s modus operandi to coexistence considerations prompted a new approach in the agency’s EIS for deregulating alfalfa. Historically, the agency proposed one of two alternatives in its NEPA-mandated decision documents: grant the petition for “non-regulated status,” also referred to as full deregulation of the GM plant, or the “no action alternative” of maintaining the plant as a regulated item under the Plant Protection Act.95 In the Final EIS for GM alfalfa, the agency broke from this bi-modal decision matrix and offered up a third alternative that would specify isolation distances and geographical restrictions as a condition of deregulation—in other words a “partial deregulation.”96 More importantly, the USDA designated both the full and partial deregulation options as “preferred alternatives.”97 Even more strikingly, the agency identified the partial deregulation option as a preferred alternative because it “[met] the USDA’s purpose and need to promote programs that support coexistence of all types of agricultural practices and addresse[d] concerns expressed by some members of the public about the potential for cross pollination and other related impacts to non-GM alfalfa.”98

The agency eventually settled on the full deregulation alternative,99 but the mere fact that it acknowledged some responsibility to facilitate

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93 Id. at *6.
94 See Ctr. for Food Safety v. Vilsack, 753 F. Supp. 2d 1051 (N.D. Cal. 2010). But see Ctr. for Food Safety v. Vilsack, 636 F.3d 1166 (9th Cir. 2011) (overturning latest district court injunction in this six-year litigation over deregulation of sugar beets).
95 For a description of the provisions of the Plant Protection Act applicable to genetic engineering, see Alan McHughen & Stuart Smyth, US Regulatory System for Genetically Modified Organism (GMO, rDNA, or Transgenic) Crop Cultivars, 6 Plant Biotechnology J. 2, 4-7 (2008).
97 Id. at 109.
98 Id.
99 U.S. Dep’t of Agric., Animal and Plant Health Inspection Serv., Record of Decision, Glyphosate-Tolerant Alfalfa Events J101 and J163:
coexistence is a significant, albeit incremental, step in the evolution of coexistence in the United States. Moreover, it is emblematic, perhaps, of a revised philosophy within the USDA that recognizes the value of the broader rural economy with all its constituent variations, and not solely production quantity, within its matrix of success.

**B. A Philosophical Shift by USDA Leadership?**

As noted above, for decades, USDA Secretaries beseeched farmers to increase the size of their farms, or leave the business of farming so that others could more productively use the nation’s finite supply of arable land.\(^{100}\) But when viewed in the context of the agency’s broader statutory mission to promote “agriculture, rural development, aquaculture, and human nutrition,”\(^{101}\) this “Get Big or Get Out” approach neglected many of the subtleties of rural development such as innovative small business and the multiplier effect of local food systems on rural economies.\(^{102}\) Although a topic of substantial scholarship in the European Union, the linkage between vibrant rural community and diverse agricultural production is a relatively novel concept in domestic literature.\(^{103}\) The

\(^{100}\) See supra text accompanying note 22.


\(^{103}\) See generally Terry Marsden & Everard Smith, Ecological Entrepreneurship: Sustainable Development in Local Communities Through Quality Food Production and Local Branding, 36 Geoforum 440 (2005) (discussing the importance of specialized food networks in contributing to sustainable rural development); Henk Renting et al., Understanding Alternative Food Networks: Exploring the Role of Short Food Supply Chains in Rural Development, 35 Env’t and Plan. A 393 (2003) (analyzing increase in organic farming in response to challenges to conventional production practices in the European Union); Cardwell, supra note 45, at 131 (discussing multi-functional aspects of agriculture in the European Union); Marne Coit, Jumping on the Next Bandwagon: An Overview
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USDA’s Economic Research service, in a 1999 publication, did note that “direct marketing may also contribute to the rural economy by preserving small farms,” but focused more attention on agricultural tourism and the attendant restaurant meals and lodging expenditures by urban visitors as opposed to developing viable, small scale food systems that would operate beyond the urban fringe.104

Secretary Vilsack, at least in his public pronouncements, has embraced a vastly different view. In referring to the competing approaches to agriculture—commodity production using genetic engineering technologies in contrast to conventional or organic methods—the Secretary proclaims that he has “two sons, and I love them both.”105 In this era of fiscal crisis and calls for reduced government support, however, it is unclear how the agency will support “both sons” or otherwise attempt to provide regulatory, research or substantial financial support to level the competitive playing field for specialty crops and non-commodity production. The agency did have an opportunity to adopt a revised approach to coexistence and therefore indirect support for conventional or organic crops with respect to the GM alfalfa petition for deregulation, but, much to the dismay of those outside commodity agriculture, eventually settled on a status quo response of full deregulation and perpetuation of the fence out position.

In its Record of Decision for GM alfalfa, the agency noted that many comments from agricultural trade associations questioned the authority of the USDA to implement a partial deregulation alternative in order to foster coexistence.106 In acquiescing to this argument, the

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104 Fred Gale, Direct Farm Marketing as a Rural Development Tool, 12 RURAL DEV. PERSP. 19, 20-21 (1997).
agency adopted a narrow view of its regulatory authority under the Plant Protection Act.107 The Act and implementing regulations define a “plant pest” in relation to the potential agronomic impact—injury, damage, or disease to a plant or plant product.108 Implicit in the agency’s decision to reject implementing coexistence measures as beyond the scope of its Plant Protection Act authority is an underlying belief that GM pollen drift resulting in a physical change to the recipient plant does not cause an “injury” or “disease”—despite the holdings in the StarLink or LibertyLink Rice litigation discussed above.109 Moreover, in its Record of Decision, the agency reverted to its failed arguments in the initial stages of the alfalfa litigation,110 noting that “non-regulatory options are available to manage low level presence of GE traits . . . and can include industry led best management practices . . . and private testing and verification programs.”111 Thus, despite the pledge to support both segments of agriculture, the agency once again placed the coexistence burden exclusively on the non-GM farmer.112

V. POTENTIAL DIRECTIONS AND CONCLUDING THOUGHTS

Export barriers to genetically engineered crops will remain for the foreseeable future.113 Increasing food and feed costs in the European Union faced stiff opposition against enforcing [the proposed partial deregulation option] . . . with agribusiness lobbyists and Republican lawmakers in the House questioning whether the agency even had the legal authority to approve a partial deregulation of a biotech crop.”).  

109 See supra Part III (discussing the StarLink and LLRice 601 litigation finding pollen drift a “physical injury” to the plant).
111 Alfalfa Record of Decision, supra note 99, at 14.
112 The USDA noted that many comments to the Final EIS for alfalfa supported the full deregulation alternative as being “consistent with past deregulation decisions.” Id. at 5.
Union may signal increased flexibility, but strong public resistance to genetic technology in the food supply persists.\textsuperscript{114} Even if other nations relax import barriers on genetically engineered plants, strict product labeling requirements will require product segregation throughout the supply chain in order to meet GM labeling and traceability rules.\textsuperscript{115} Thus the need for workable coexistence measures will remain for the foreseeable future.

In 2006, the National Association of State Departments of Agriculture and the Pew Initiative on Food and Biotechnology organized members for agriculture (both commodity producers and organic farmers), government regulators, biotechnology industry representatives and academics to discuss how to achieve “peaceful coexistence.”\textsuperscript{116} Although the meeting successfully opened an important dialogue on the issue, the current environment is far from tranquil as each new genetically engineered plant variety now confronts the threat of litigation in addition to securing regulatory approval.\textsuperscript{117} This applies even in novel, non-food GM plants intended exclusively for industrial purposes, such as the genetically engineered eucalyptus tree developed by ArborGen for the paper and bioenergy industry.\textsuperscript{118}

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{114} See Gaskell et al, supra note 5, at 36-39.
\item \textsuperscript{117} See discussion supra Part IV.A (discussing litigation over new genetically engineered varieties of alfalfa and sugar beets).
\end{itemize}
\end{footnotesize}
The USDA, via its regulation of alfalfa, could have taken a firm step in the direction of coexistence by adopting the partial deregulation alternative. This would have restricted cultivation of GM alfalfa for seed production purposes (when GM pollen drift is more likely) to certain areas and preserved the availability of other regions to produce non-GM seed. Carving alfalfa production into different regions for coexistence purposes is not a novel idea. Idaho and Washington have divided their respective states into regions for the production of two incompatible types of rapeseed. The proposed partial deregulation of alfalfa would have adopted a similar regulatory process. The agency’s purported lack of authority to implement even this relatively straightforward solution has a genesis dating back to the original position of the government not to create a unified statutory and regulatory system to oversee genetic engineering, but rather to cobble together the authority of three separate agencies (the USDA, EPA and FDA) working under the jurisdiction of what was four (now three) separate statutes.

That the USDA hesitates to proclaim that the Plant Protection Act does not explicitly include provisions relating to the negative economic externalities of biotechnology is not surprising. But the agencies have stretched their statutory authority in other ways in order to regulate products of biotechnology (e.g., EPA regulates bacterium inserted into plants as “plant pesticides” or “plant incorporated protectants” under the Federal Insecticide, Fungicide and Rodenticide Act and FDA regulates genetically engineered animals under the “new animal drug provisions of the Food Drug and Cosmetic Act”). But the USDA’s decision to

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119 See Endres, supra note 34, at 215-17 (discussing Idaho and Washington rapeseed districts).


122 For a general discussion of the potential regulatory gaps in the regulation of genetic engineering and extensions of agency authority beyond a strict reading of the statute, see Pew Initiative on Food and Biotechnology, Guide to U.S.
abdicate any responsibility for coexistence leads one to question if the Secretary’s “two agricultural sons” that he “love[s] equally” is not just a softer version of “Get big or get out!” because, when push comes to shove and hard decisions must be made, a “love” for commodities remains more important than supporting alternative approaches to rural development. The result is a missed opportunity by the agency to devise some form of peaceful coexistence and minimize future litigation. As it now stands, farmers whose fields are those subjected to contamination from genetically engineered crops have both the StarLink and LibertyLink Rice precedent upon which to build their case for a private law remedy.
I. BACKGROUND

Last year President Barack Obama signed into law a sweeping update of the nation’s food-safety system.\(^1\) Many commentators have called the new legislation the most important update of Food & Drug Administration (FDA) authority in nearly seventy-five years.\(^2\)

Just what does the new $1.4-billion law provide taxpayers? The general consensus among supporters of the Food Safety Modernization Act (FSMA) is that it will both give the FDA more power to crack down on food-safety scofflaws and decrease the incidence of foodborne illness across the country.\(^3\)

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\(^3\) See Press Release, Sen. Carl Levin, Senate Floor Statement on the FDA Food
The Act will almost certainly accomplish the former by providing the agency with not just tens of millions of additional dollars to spend each year, but also new ways to spend the money, including the ability to hire thousands of new inspectors with new powers. But was FDA power and authority really an issue?

Prominent food-safety advocates from Marion Nestle to Michael Pollan over the years have painted the FDA as a neutered agency powerless to stop the excesses of large food producers. Similarly, a joint Institute of Medicine/National Research Council food-safety report issued in 2010 concluded that the FDA needed more power, a claim the agency immediately embraced. Others, though, chafe at this characterization. One critic claims the FSMA will “waste billions of taxpayer dollars without making our food supply any safer.”


7 See Mary Clare Jalonick, FDA Needs to Make Changes, Report Finds, BOSTON.COM (June 9, 2010), http://www.boston.com/news/nation/washington/articles/2010/06/09/fda_needs_to_make_changes_report_finds (quoting FDA commissioner Margaret Hamburg, who claims “the report clearly highlights the need for enactment of pending legislation that provides much needed authorities and resources to assist in our efforts to ensure the safety of our nation’s food supply”).

8 Gregory Conko, More FDA Authority Won’t Improve Food Safety, FORBES (Dec.
The Food-Safety Fallacy: More Regulation Doesn’t Necessarily Make Food Safer

Who will see their competing vision proven correct—critics or supporters of the new law? While only the future will tell, we can and should look to the past to predict whether costly government efforts to make our food safer will succeed. In hindsight, the FDA’s own record—and those of other federal agencies—shows that food-safety regulations often rest on factually erroneous premises and, consequently, can sometimes be so counterproductive that they may tend to actually make consumers less safe. Examples of this phenomenon exist throughout history, and these examples will serve as the focus of this article.

Policies that are based on flawed science and that negatively impact public health are by no means confined to the area of food safety. For example, the FDA recently attempted to ban electronic cigarettes. See Don Jeffrey, FDA Loses Appeal, Can’t Regulate E-Cigarettes as Drug, Bloomberg (Dec. 7, 2010), http://www.bloomberg.com/news/2010-12-07/fda-can-t-regulate-electronic-cigarettes-as-drug-u-s-appeals-court-rules.html. Public-health researchers paint electronic cigarettes as a safer alternative to traditional cigarettes. See Electronic Cigarettes Hold Promise as Aid to Quitting, Bos. Univ. Sch. of Pub. Health, http://sph.bu.edu/index.php?option=com_insidernews&categoryid=94&sectionid=15&articleid=3497&task=view&id=623&deptid=&Itemid=617365 (last visited June 24, 2011) (quoting a study by Prof. Michael B. Siegel, M.D., who notes that banning electronic cigarettes “would invariably result in many ex-smokers returning to cigarette smoking . . . [and] would substantially harm the public’s health”). In another notorious example of federal policies that diminished the public health, the federal government only in 2010 lifted its morally shameful and scientifically indefensible twenty-two-year ban on admitting immigrants to the United States who were known to carry the HIV virus or to have AIDS. See US Lifts HIV/AIDS Immigration Ban, BBC (Jan. 4, 2010), http://news.bbc.co.uk/2/hi/americas/8438865.stm. While there is no evidence the ban made Americans safer, it no doubt harmed those seeking to travel to the United States in search of medical care.

One recent example, which was used to drive home the need for more FDA power and funding during the FSMA debate, involved data pertaining to the high incidence of foodborne illness in America. As Senator Carl Levin emphasized during debate over the bill’s enactment:[E]ach year, 76 million Americans are sickened by food-borne illness. More than 300,000 become so
Section II of this article describes key differences between “old” and “new” conceptions of public health, and the evolving relationship of these terms to food safety. Section III gives several examples of food-safety regulations that made consumers less safe, rather than safer. Finally, Section IV suggests a return to “old” public health as a meaningful alternative to increased federal spending and authority in the area of “new” public health.

II. **FOOD SAFETY: OLD V. NEW**

When I refer to “food safety,” I am discussing food matters that reside within the realm of public health. But because the kingdom of public health has evolved and expanded over the last couple of decades—reaching beyond what Prof. Richard Epstein refers to as “old” public health to also include what he labels “new” public health—a modern definition of “food safety” requires a consideration of both the *old* and the *new*.

To distinguish between *old* and *new* public health, Epstein notes that *old* seeks chiefly to prevent the spread of “communicable diseases” between and among unsuspecting victims. Not coincidentally, the *old* public health constituted a chief focus and mission of the FDA at its formation (e.g., protecting public health by seizing tainted foods that were traveling in the stream of interstate commerce). sick they must be hospitalized. More than 5,000 die of their illness. . . . The situation cries for action, which is why I support passage of the legislation we are now considering, the FDA Food Safety Modernization Act. Levin, *supra* note 3. As Congress considered passage of the FSMA, the Centers for Disease Control and Prevention (CDC) reduced its estimates of both deaths and illnesses by approximately forty percent, claiming the revised numbers more accurately reflected the burden of foodborne illness among the U.S. population. See Maggie Fox, *Tainted Food Sickens 48 Mln Each Year*: CDC, Reuters (Dec. 15, 2010), [http://www.reuters.com/article/2010/12/15/us-food-sickness-idUSTRE6BE4CG20101215](http://www.reuters.com/article/2010/12/15/us-food-sickness-idUSTRE6BE4CG20101215).


12 *Id.* at 4 (noting that “old” public health focuses on “matters of communicable diseases and sanitation”).

13 *See, e.g.*, United States v. Lexington Mill & Elevator Co., 232 U.S. 399, 409
New public health, on the other hand, does not concern itself with the spread of communicable diseases. Rather, writes Epstein, it “reaches to any matter of general public interest or concern,” such as people’s choice to eat certain foods that are not adulterated—at least not in any traditional, scientific, or “old” sense of the word.\endnote{14}

Evidence of regulatory mission creep—with agencies shifting foci from old to new—abound. The CDC presents one good example. Even acknowledging that the agency is now the “Centers for Disease Control and Prevention,” one would need to stretch the limits of the English language beyond the breaking point to determine what “disease” the CDC is trying to either “control” or “prevent” when it focuses (as it does) on topics like seat belt use\footnote{15} or marriage.\footnote{16}

Notably, the FDA itself acknowledges that its own concept of “food safety” transcends the old and embraces the new. For example, on its Keep Food Safe blog, located at FoodSafety.gov, the agency describes its recent campaign against beers that contain caffeine, alleging that caffeine is—in only certain tortured and specific instances—unsafe when appearing in beer.\footnote{17}
Examples abound throughout history of well-intentioned food laws that made consumers less safe. France once banned potatoes, as many early food-safety advocates considered them to be poisonous and believed they caused leprosy. The “poke-and-sniff” method—employed for decades by the U.S. Department of Agriculture (USDA) to inspect meats so as to prevent foodborne illness—was, instead, probably the best means of transmitting foodborne illness. In these and other instances, costly federal action did not improve public health but instead likely made consumers less safe.

A. Historical Food-Safety Bans: Potatoes, Tomatoes, & Café au Lait

In his influential Notes on the State of Virginia, Thomas Jefferson strongly refutes the notion that government has a role to play in determining what we can and cannot eat. And he does so in part by expressing umbrage toward a contemporary French food-safety law.

The legitimate powers of government extend to such acts only as are injurious to others. . . . Was the government to prescribe to us our medicine and diet, our bodies would be in such keeping as our [British-subjugated] souls are now. Thus in France the emetic was once forbidden as a medicine, and the potato as an article of food.

France—which lends its name to the “French fry”—once banned potatoes. Why? The potato ban was based on food-safety concerns, which centered on the spud’s purported ability to cause “not only leprosy, but

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18 See discussion infra Part III.A.
19 See discussion infra Part III.B.
21 Id. at 440-41.
also syphilis, narcosis, scronfula, early death, sterillity [sic], and rampant sexuality.”

For these reasons, France banned eating potatoes in 1748. It took the efforts of one Frenchman whose life had been saved by the potato to reverse the ban. Antoine-Augustine Parmentier, a French military pharmacist captured in the Eighteenth Century by the Prussian army, had been forced to live for years on a ration of nothing but potatoes. Soon after Parmentier returned to France upon his release, he found the country suffering from food shortages and famine. Parmentier appealed on behalf of the potato to both the nobility and peasants—by, for example, planting the spud on public land and posting guards nearby so as to make the potato seem like a valuable commodity—which helped the potato become a staple in France. There is no telling how many lives Parmentier saved through his efforts in times of famine to both legalize and popularize potatoes.

While the potato ban may have had dire consequences in France, it hardly stands alone as an example of a needless ban. The mixing of milk and coffee was once falsely thought to cause leprosy, while the tomato was once widely considered to be poisonous.

If these food-safety scares seem quaint and steeped in folklore, perhaps it is because of their antiquity. But more recent—even current—actions by a host of federal agencies still conjure images of a pseudo-scientific approach to ensuring the food we eat is safe. These examples are ones we might have thought (and hoped) had been abandoned long ago.

25 Id.
26 See Larry Zuckerman, *The Potato* 82 (1999) (describing how an award-winning essay on the potato that Parmentier wrote during France’s 1770 famine brought him to the attention of King Louis XV).
27 See id. at 83 (reporting that Parmentier used this “ruse” to help popularize the potato among the peasant class).
B. The USDA: Poke-and-Sniff

The Federal Meat Inspection Act,\(^30\) passed in June 1906, arrived on the heels of the publication of Upton Sinclair’s novel *The Jungle*.\(^31\) While Sinclair’s book was a work of fiction—and the author wrote the work not to advocate in favor of food-safety reforms, but rather in support of socialism and the working class\(^32\)—the novel’s description of filthy Chicago stockyards and vile meat processing conditions hit a nerve both with the public and elected officials.\(^33\)

The Federal Meat Inspection Act required USDA meat inspectors to be in place during working hours at all meatpacking plants and other facilities.\(^34\) The “poke-and-sniff”\(^35\) method very ably describes the approach inspectors employed to determine whether a given piece of meat was safe. Poke-and-sniff often entailed having an inspector “poke” a piece of meat with a rod and “sniff” the rod to determine, in the inspector’s opinion, whether the meat contained pathogens.\(^36\) This method meant that the hands, eyes, and noses of inspectors were to be literally the front line of the USDA’s food-safety regime.

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30 Ch. 3913, 34 Stat. 674 (1906).
34 21 U.S.C. § 606(a) (1907) (requiring the “examination and inspection of all meat food products prepared for commerce in any slaughtering, meat-canning, salting, packing, rendering, or similar establishment”).
The most frequent criticism lobbed against the poke-and-sniff method—indeed the justification for dispensing with it in favor of the more modern Hazard Analysis and Critical Control Points (HACCP) approach—is that it was an ineffective means of detecting pathogens in food. This is because bacteria, even when legion, are microscopic. They are not visible to the naked eye, and can be odorless. Bacteria’s putrefying effects on meat may become visible or detectable to the nose over time. However, the period of time needed for contamination to become readily detectable by human senses (like sight or smell) can be lengthy and varies due to factors like temperature. This means that contaminated meat inspected in a slaughterhouse becomes more likely to display evidence of pathogens the more time passes and the closer it gets to the consumer—as in a butcher shop, a restaurant, or the home.

37 See Editorial, Applaud Belated Scientific Approach to Testing Meats, Poultry for Safety, FT. LAUDERDALE SUN-SENTINEL, July 14, 1996, at 4G (“Since 1907, the U.S. government has relied on an unscientific and grossly inadequate ‘poke and sniff’ method, in which the inspector would look at, feel and smell the meat to judge if it were fresh or spoiled.”); Ron Hicks, Acting Undersecretary for Food Safety, U.S. Dep’t of Agric., Remarks at the Association of Food and Drug Officials 113th Annual Education Conference (June 8, 2009), available at http://www.fsis.usda.gov/News_&_Events/Speech_060809_Hicks/index.asp (contrasting the old poke-and-sniff method with more modern means of detecting pathogens that embrace “science and technology”). Interestingly, this criticism seems at least as appropriately directed at the more modern regime as it is at the poke-and-sniff regime. See Conko, supra note 8 (“[T]he usefulness of inspections is limited by a practical inability to detect microbial pathogens.”). For more information on the FDA’s HACCP system, see Hazard Analysis & Critical Control Points (HACCP), U.S. FOOD & DRUG ADMIN., http://www.fda.gov/food/foodsafety/hazardanalysiscriticalcontrolpoints/criticalcontrolpoints.htm (last visited Jan. 24, 2012) (“HACCP is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product.”).


39 See STEPHEN J. JAMES & CHRISTIAN JAMES, Meat Refrigeration 4 (2002) (describing the process by which odor and “slime” on spoiled meat become apparent to human senses, and stating that the early stages of spoilage detection are largely a subjective effort on the part of an inspector).
Thus, under poke-and-sniff, if a piece of meat was in fact tainted but the inspector’s eyes or nose could not detect the contamination after he poked the meat, the inspector would again use his hands or the same rod to poke the next piece of meat, and the next, and so on. In this way, USDA inspectors undoubtedly transmitted harmful bacteria from one contaminated piece of meat to other uncontaminated pieces in untold quantities and, consequently, were directly responsible for sickening untold numbers of Americans by their actions. Poke-and-sniff—incredibly a centerpiece of the USDA’s meat inspection program until the late 1990s—was, in terms of its sheer efficiency at transmitting pathogens from infected meat to clean meat, nearly the ideal device. Add to this the fact that the USDA’s own inspectors were critical of the inspection regime from the start, and that the USDA abdicated its inspection role at hundreds of meat processors for nearly three decades, and it becomes quite apparent that instead of making food safer, poke-and-sniff made food and consumers less safe.

40 Ft. Lauderdale Sun-Sentinel, supra note 37.
41 See Says Bad Meat is Passed, N.Y. Times, June 11, 1909, available at http://query.nytimes.com/mem/archive-free/pdf?res=F60614FB355512738DDDA80994DE405B898CF1D3 (“‘The inspection at the National Stock Yards,’ [says former USDA inspector J.F. Harms, who resigned in protest and went public with his claims against the USDA,] ‘is costing the people approximately $100,000 a year, and it is not actually worth $1 to them.’”).
43 The FSMA mandates that “all high-risk domestic facilities must be inspected within five years of enactment and no less than every three years thereafter.” Margaret A. Hamburg, Food Safety Modernization Act: Putting the Focus on Prevention, FOODSAFETY.GOV, http://www.foodsafety.gov/news/fsma.html (last visited Jan. 24, 2012). The FSMA requires the FDA to carry out exactly two inspections of each high-risk facility over a period of eight years. See FDA Food Safety Modernization Act, 21 U.S.C.A. § 350j(a)(2)(B) (West 2011). This reveals how pitifully little bang for the buck the FSMA delivers to consumers and taxpayers.
The FDA attempted to ban the sweetener saccharin in the late 1970s. The ban was based on one Canadian study that showed evidence of bladder cancer in rats that consumed massive quantities of saccharin daily, for a period lasting their entire lifetimes. The scientific justification underpinning such a ban appeared ludicrous at the time, even to the FDA. Public outrage followed. After Congress and President Carter balked, the agency permitted the sale of products containing saccharin, the only artificial sweetener on the market at the time, provided product labels and vending machines displayed a required cancer warning. In May 1980, the Environmental Protection Agency (EPA) added saccharin to its “list of hazardous constituents.” Twenty years later, Congress finally lifted the FDA’s warning requirement. A mere ten years after that, the

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44 See Bernard Weintraub, Saccharin Ban Stirs Demand to Curb F.D.A., N.Y. Times, Mar. 12, 1977, at 11. Opposition to the ban stemmed in part from possible increases in heart disease and arthritis that critics said would result from it. Id.

45 See What the Country’s Newspapers are Saying, Nashville Tennessean, reprinted in Bryan Times, Mar. 18, 1977, at 4, available at http://news.google.com/newspapers?id=iblPAAAAIBAJ&sjid=VFIDAAAAIBAJ&dg=100-rats-were-fed-a-diet%20of%20saccharin&pg=6588%2C6641666 (“The FDA banned saccharin on the basis of a Canadian study in which 100 rats were fed a diet of 5 [percent] pure saccharin for their entire lives.”).

46 See id. (“The FDA said that in order to consume an equivalent amount of saccharin [as the Canadian rats], a person would have to drink 800 12-ounce diet sodas a day for a lifetime.”) (emphasis added).

47 See Tom Shales, Fat Reaction to Ban Continues, Tuscaloosa News, Apr. 10, 1977, at 8C (describing the passionate backlash against the FDA’s action, which included, according to one FDA employee, “more calls than we’ve ever received on a single subject that I can recall”).


50 Saccharin, Calorie Control Council, http://www.caloriecontrol.org/sweeteners-and-lite/sugar-substitutes/saccharin (last visited July 1, 2011) (“On December 21, 2000, the President signed federal legislation to remove the saccharin warning label that had been required on saccharin-sweetened foods
EPA finally removed saccharin from its list. Saccharin, so long maligned and yet perfectly safe, had moved with the stroke of a pen from being a food-safety issue to being “safe.”

But there were consequences to the government’s treatment of saccharin. Today, some critics claim sugar in soda is a prime culprit behind America’s obesity epidemic and the rising incidence of adult-onset diabetes. Yet, for more than thirty years, federal agencies fought to prevent saccharin—a glucose- and calorie-free sweetener popular with diabetic consumers and those watching their weight—from appearing on the market, or permitted it to appear but unfairly smeared it with cancer warnings. This fearmongering by the government caused some who might have consumed diet soda to drink sugary soda instead. Regardless of whether sugary sodas bear any responsibility for the obesity epidemic or for rising levels of adult-onset diabetes, federal saccharin regulations might have caused Americans to ingest more calories, over a period of more than three decades, than they otherwise would have.


54 Cf. Diabetes Association Backs Saccharin Use, LODI NEWS-SENTINEL, Apr. 25, 1979, at 17 (showing support among diabetes interest groups for legalization of saccharin).
D. TTB & FDA Ban a Few Caffeinated Beers

From 2009 to 2010, the FDA and the Treasury Department’s Alcohol and Tobacco Tax and Trade Bureau (TTB) worked together to force several caffeinated beers—including Four Loko—off the market. The FDA claimed that the presence of added caffeine in beer has not been shown to be safe. Though Four Loko, one of the banned drinks, carried a nefarious reputation as the party drink of choice for college-age fraternity brothers, it contained about the same amount of caffeine as eight ounces of Starbucks coffee.

Both the logic and science behind the ban do not withstand scrutiny. First, Americans have consumed caffeinated drinks like Kahlúa or rum and cola for generations with no intrinsic ill effect. Furthermore, during the course of one meal, people often consume alcohol beverages, like wine, with a main course and minutes later caffeinated beverages, like coffee, with dessert. Centuries of human

59 See id. at 6.
60 On November 24, 2009, nine days after the FDA revealed it had sent warning letters to the makers of Four Loko and other caffeinated alcohol beverages, the Obama administration served guests at its first formal state dinner a five-course meal featuring four different wine pairings followed by a coffee service. See State Dinner in Honor of His Excellency Dr. Manmohan Singh, Prime Minister of the Republic of India, and Mrs. Gursharan Kaur, White House (Nov. 24, 2009), http://www.whitehouse.gov/files/documents/2009/november/state-dinner-press-preview.pdf; Press Release, U.S. Food & Drug Admin., FDA To Look Into Safety of Caffeinated Alcoholic Beverages; Agency Sends Letters to
experience with alcohol and caffeine have demonstrated the safety of this combination.

Second, the chief study upon which the ban is based focuses on drinks like rum and cola.61 Such drinks differ markedly from pre-mixed drinks like Four Loko in that the former are mixed at home or in a bar in potentially indeterminate and varying quantities,62 while drinks like Four Loko contain pre-measured quantities of both alcohol and caffeine.63 As a result, the science upon which the ban rests is not specific to the beverages that are subject to the ban.

Third, and perhaps most important, the FDA’s action only bans the direct addition of caffeine, in any amount, to beer.64 The ban leaves on the market both other non-beer alcohol beverages containing added caffeine and beers containing substances that themselves contain caffeine as an ingredient.65 As for the former, the FDA has not explicitly banned the direct addition of caffeine to either wine or spirits.66 As for the latter, the agency still does permit the direct addition to beer of various substances


61 See Linnekin, supra note 58, at 3-4 (describing the influence on a group of state attorneys general and the FDA of a study by Wake Forest University researcher Dr. Mary Claire O’Brien).


63 See Linnekin, supra note 58, at 1.


65 The logic behind the ban—that beer made with caffeine is unhealthy, but beer made with coffee containing caffeine is not—brings to mind the absurd alchemist’s warning that mixing coffee with milk caused leprosy (but that either coffee alone or milk alone was perfectly healthy). See Allen, supra note 28, and accompanying text.

that contain caffeine naturally—such as coffee, tea, mate, and guarana—at any level, without limitation.67

Evidence of the slapdash nature of the ban can be seen in the FDA’s decision to ban Moonshot ‘69, a beer with added caffeine brewed by Rhonda Kallman, one of the founders of the Boston Beer Company.68 Moonshot contained about the same amount of alcohol as a can of Budweiser and similar caffeine levels as those found in half a cup of coffee.69 Dozens of higher-alcohol-content beers flavored with coffee or other caffeinated substances thankfully escaped the wrath of the FDA and TTB and remain on the market.70

From a food-safety perspective, the FDA’s decision to remove a product like Moonshot from the market simply because it contains added caffeine—while allowing (as the agency should) products that contain both more alcohol and more caffeine to remain on the market—smacks of fearmongering and pseudoscience. The FDA’s actions here under the guise of food safety will do nothing to make food safer. Meanwhile, the concomitant health halo71 that the ban may place around drinks


69 Moonshot, which is no longer on the market after the ban, contained sixty-nine milligrams of caffeine. See All Systems Go, NEW CENTURY BREWING Co., http://web.archive.org/web/20110202153329/http://moonshotbeer.com/Moonshotbeer.com/All_Systems_Go.html. That amount is less than half that found in an eight-ounce cup of Starbucks coffee. See Conko, supra note 57, and accompanying text.


71 See Alex Mindlin, Eating Up Calories and Propaganda, N.Y. TIMES (Sept. 3,
still on the market that contain more caffeine, more alcohol, or both compared to some of the banned drinks—along with the uncertain amounts of alcohol and caffeine that appear in beverages that are not pre-mixed—could actually mean the FDA ban will make drinkers less safe.

E. The FDA, USDA, and the 380-Million-Egg Recall

In August 2010, approximately 380 million salmonella-tainted eggs from one laying facility were recalled by the producer, Wright County Egg. Controversy arose over the fact that USDA egg graders were present at the offending laying facility but did not report numerous alleged violations of federal law.

In the wake of the recall, many advocates of increased food-safety spending and the FSMA argued that the problems arose from deficits in agency oversight authority, which they claimed left giant egg-laying operations virtually unregulated. These advocates claimed the duty of USDA egg inspectors was merely to perform voluntary egg grading for labeling purposes. Taken to its logical end, this line of reasoning

75 Lyndsey Layton, As Egg Producers Consolidate, Problems of Just One Company Can Be Far-Reaching, Wash. Post, Aug. 24, 2010, at A1 (“As the mega-producers have developed during the past 20 years, they have gone largely unregulated by government agencies responsible for making sure food is safe.”).
76 But see Young, supra note 73 (“U.S. Department of Agriculture staff regularly
would mean that USDA inspectors were not charged with “regulating” anything. These advocates argued that any oversight authority rested not with USDA, but with the FDA—which governs most aspects of shell eggs—and that the FDA only gained the power to inspect egg-laying premises in the wake of the 2010 egg recall.\(^7\)

This characterization of a narrow USDA role finds strong opposition from the USDA’s own American Egg Board (AEB), which “is funded by a national legislative checkoff” program and which consists of a board of eighteen members who are “appointed by the U.S. Secretary of Agriculture.”\(^7\) The AEB website states that USDA graders first—before any grading takes place—examine eggs “for both interior and exterior quality.”\(^7\) Furthermore, an egg grader may only stamp eggs as meeting a certain grade if the grader determines “that the eggs have been processed, packaged and certified under federal supervision. . . . Plant processing equipment, facilities, sanitation and operating procedures are continuously monitored by the USDA grader.”\(^8\)

Thus, USDA egg graders were at least partly responsible for determining whether the eggs they graded were safe. Yet the presence of these egg graders at the laying facility did nothing to ensure the eggs were safe—in spite of the graders’ duty. The egg graders’ presence and oversight merely offered a false veneer of safety—a facade that made food less safe.

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80 Id.
IV. AN ALTERNATIVE TO INCREASED FEDERAL SPENDING AND AUTHORITY

Typically, when news reports expose problems in the food-safety system, commentators instinctively urge that more money and more authority be shifted from taxpayers to regulators. In the case of the FSMA, passage of the Act itself has been used to justify more spending on food safety. But bigger budgets and more authority did nothing, for example, to end the decades-long poke-and-sniff regime. Neither did decades of increased budgets and increased power prevent the recall of more than 300 million eggs laid and graded at a facility teeming with federal regulators.

These examples, along with the potato ban and others, demonstrate that laws and regulations often lack a reasonable basis in logic and science on the one hand, and a mistaken belief that government has the authority, knowledge base, and duty to micromanage the nation’s eating habits on the other. These low points in food-safety regulation have had unintended food-safety consequences of their own. While Americans may chuckle today at the irony of USDA inspectors spreading disease from carcass to carcass to consumer under the guise of preventing disease, not only did the poke-and-sniff method and other aforementioned regulations not make food safer, they also sometimes succeeded in making food less safe and people less healthy.

So if more money and more authority do not make food safer, is there an alternative? Yes. Congress should require federal agencies to return to regulating on behalf of the old public health. The government

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81 Critics have attacked America’s federal food laws as toothless at least since Harvey W. Wiley, the very architect of the Pure Food and Drugs Act of 1906, blasted enforcement under the Act in 1929. See Wiley, supra note 13, and accompanying text.

82 See Bittman, supra note 2. Within weeks of the FSMA’s passage, Marion Nestle had already proposed eight costly improvements to the Act. Nestle, supra note 5. Likewise, the new editors of the journal Food Policy view the FSMA as a mere weigh station en route to still more federal funding and regulation. See Flynn, supra note 2 (noting that though the FSMA “was the biggest thing to happen to food safety in Washington D.C. in the past 73 years,” it is still insufficiently sweeping to please the journal’s editors).

83 See Epstein, supra note 11, at 4-5, and accompanying text.
should stop trying to eliminate all risk from the adult diet, and let people knowingly make decisions about their own health vis-à-vis food (as with unpasteurized dairy products or Four Loko).

A return to old public health would help agencies that claim to be hampered by limited budgets to fulfill more effectively their missions. Efforts by the FDA to prevent mad cow disease by banning the feeding of offal to animals, for example, demonstrate a proper “old” public-health focus that government regulators should pursue.

Is mere scientific consensus the answer? No. Scientists and scientific consensus are often wrong. And as America inches more and more toward technocracy—the misguided idea that “smart” people in the “right” places in government who think for us can and should identify and solve all our problems—we move further away from America’s founding values.

The increasingly chic Precautionary Principle—the notion that all is bad unless proven good—is too costly, freedom-constraining, and innovation-killing a rule by which to govern society, and it runs

84 See id. at 5 (“The new public health frustrates the very ends that it is intended to serve because it lacks focus and definition. It extends regulation into areas where it ought not to take place, and thus saps the resources and focus to deal with matters, here the spread of communicable diseases where regulation is appropriate.”).


afoul of basic constitutional principles. The Harm Principle, on the other hand, was a good enough premise upon which to cement our country’s founding, and has not lost its luster in the centuries since.

“Truth can stand by itself,” writes Jefferson in his Notes on the State of Virginia, a statement that immediately follows his remarks on food safety and which demonstrates his faith in the Harm Principle. “Subject opinion to coercion: whom will you make your inquisitors? Fallible men; men governed by bad passions, by private as well as public reasons. And why subject it to coercion. To produce uniformity. But is uniformity of opinion desirable? No more than of face and stature.”

Importantly, Jefferson points here to the role of civil society in helping ensure our food is safe. Rather than subjecting opinion to coercion, we should subject it to debate within the marketplace of ideas. Such is the public sphere where advocacy groups with markedly different views of nutrition and health—including the Center for Science in the Public Interest (which publishes the often-excellent Nutrition Action Healthletter), as well as vegan, Paleo, organic and myriad other

89 See Robert M. Hardaway, No Price Too High: Victimless Crimes and the Ninth Amendment 202 (2003) (contending the Ninth Amendment supports the premise that “legislation that interferes with an individual’s right to privacy by prohibiting activity that does not violate the harm rule should be considered unconstitutional”).
90 See John Stuart Mill, On Liberty (1859). In referring to the principle, Mill wrote that, “the sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number is to prevent harm to others.” Id. at 22; see also Joseph Raz, The Morality of Freedom (1986).
91 See Hardaway, supra note 89; Jefferson, supra note 20, at 440-41.
92 Jefferson, supra note 20, at 441.
93 Id.
groups—scholars like Nestle\textsuperscript{98} and Pollan,\textsuperscript{99} business leaders, the legal community, and others can debate issues and ideas on food and food safety, and where the public can turn for guidance and answers.

Despite Jefferson’s admonition, we have allowed food-safety regulators—fallible men, governed by bad passions and by private and public reasons—to be our inquisitors for too long. Limiting the scope of government action in the area of food safety to old notions of public health, and returning to the Harm Principle of Mill and Jefferson, will make food safer. It will also help ensure that fewer food-safety fallacies that actually make food less safe occur in the future.

\textsuperscript{98} See Nestle, supra note 5.

\textsuperscript{99} See Pollan & Schlosser, supra note 5.
THE MOVEABLE FEAST: LEGAL, ETHICAL, AND SOCIAL IMPLICATIONS OF CONVERGING TECHNOLOGIES ON OUR DINNER TABLES

Linda MacDonald Glenn* and Lisa D’Agostino**

ABSTRACT

From genetically modified crops to nanoparticles in our food, converging technologies are changing what we eat and how we eat it. “Converging technologies” refers to the union of Nanotechnology, Biotechnology, Information Technologies, and Cognitive Sciences (NBIC). Genetically modified organisms (GMOs) are already part of the legal landscape and nanofoods are not far behind. Nutraceuticals that claim to boost brain power are already available at your local health food store; the NBIC convergence promises to deliver such results as treatments for malnutrition and obesity, targeted nutrition, timed-release food, a cruelty-free and sustainable way to produce meat, and food packaging that reports spoilage before it is visible to the naked eye. In this article we review some of the latest trends and developments in the application of nanotechnology to our foods and food sources, define nanofoods, and argue that with proper regulation and oversight this technology may provide solutions to the problems of equity of scarce resources, sustainable food practices, and ethical treatment of animals without eliminating the need for smaller family farms.

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I have long believed that good food, good eating is all about risk. Whether we’re talking about unpasteurized Stilton, [or] raw oysters . . . food, for me, has always been an adventure.

*Anthony Bourdain*¹

Don’t forget that the flavors of wine and cheese depend upon the types of infecting microorganisms.

*Martin H. Fischer*²

### I. INTRODUCTION

Food is more than mere sustenance. It is the centerpiece of many cultural traditions and identity, a source of comfort, the subject of art, poems, and song. But it is also a limited resource, a source of conflict, and a sociopolitical hornet’s nest.

In response to rapid population growth, humans have created new technologies to help meet the growing demand for food. Many of these advances have come at a hefty cost, such as the damage to the environment from factory farming, the suffering and pain to sentient beings from concentrated animal feeding operations (CAFOs), and the depletion of fish and mollusk stocks in the oceans due to overfishing.³ Stewardship of the environment and resources has been placed in government hands, yet technologies have not always been used with due consideration to sustainability of our planet’s resources and long-term consequences.⁴

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¹ *Anthony Bourdain, Kitchen Confidential* 6 (2000).
⁴ *Id.* at 10.
In 2003, two researchers at the National Science Foundation and their colleagues coined the phrase “NBIC,” referring to the convergence of four science and technology provinces:

(1) Nanoscience and nanotechnology;
(2) Biotechnology and biomedicine, including genetic engineering;
(3) Information technology, including advanced computing and communications; and
(4) Cognitive science, including cognitive neuroscience.5

Nanotechnology is a fundamental enabling technology that allows the manipulation, creation, and/or manufacture of materials and products hereto unforeseen.6 What makes it so unique is that the behavior and the properties of matter at the nano-scale (i.e., less than 100 nanometers) can change radically and display attributes (known as “quantum effects”) not seen at the macro or micro level, such as conductivity, self-assembly, elasticity, increased strength, different color or greater reactivity.7 These changes and behaviors are not always predictable.8 As with any new technology, there always will be risks, challenges, and unintended consequences accompanying the benefits.9

In the opinion of the authors, technology, nano or otherwise, can and does often amplify the full spectrum of human nature—the good, the bad, and the indifferent. Because of advances in technology, life expectancies in civilized countries are longer than they ever have been; by the same token, technology has taken and shortened lives when used for destructive purposes. “Complexity theory proposes that actions have

7 See Linda M. Glenn & Jeannann S. Boyce, Nanotechnology: Considering the Complex Ethical, Legal, and Societal Issues with the Parameters of Human Performance, 2 Nanoethics 265, 266 (2008).
8 Id.
consequences” and that those actions can have “profound effects on the . . . system.”10 The authors contend that the creation of new technology is no different. In this paper, we are advocating a thoughtful, cautious approach with a systemic, inter-relational perspective.

II. DEFINING NANOTECHNOLOGY AND NANOMATERIALS–A COMPLEX TASK

A. Definitions

The National Nanotechnology Initiative (NNI) defines a nanometer as one billionth of a meter.11 It also declares that “[n] anotechnology is the understanding and control of matter . . . at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications.”12 In the European Union, the “only legal definition for nanomaterials is” encapsulated “in the Cosmetics Regulation (EC 1223/2009), which defines nanomaterials (for labeling purposes) as ‘insoluble or biopersistent and intentionally manufactured . . . with one or more external dimensions or an internal structure on the scale of 1-100-nanometres.’”13 But size alone is insufficient to define for the purposes of regulation, as explained in the following section.

B. Size matters, but so does shape (and surface chemistry)

“If the definition” of nanomaterial “concentrated on size alone, it would encompass a vast swathe of perfectly innocuous” “nanomaterials in products from milk to chocolate.”14 However, “some researchers claim

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10 Deborah Bowman & John Spicer, Primary Care Ethics 122-23 (2007).
12 Id. at http://www.nano.gov/nanotech-101/what.
14 Id.
that use of naturally occurring nanoparticles should be treated differently than their synthetically prepared or engineered analogs.” In fact, some naturally occurring nanoparticles can be dangerous. “Exposure to naturally occurring particles” or byproducts of human activity can pose a significant risk to health (e.g., pollution, smoke from forest fires, volcanic eruptions, coal dust, talc, second-hand smoke).

Nanoparticles interact differently with their environment depending on the shape and surface chemistry. For example, silver nanoparticles are more effective if the shape is a truncated triangular nanoplate as opposed to a sphere. Cobalt nanoparticles behave very differently if they are cube-shaped, rather than spherical. Cobalt nanocubes possess different magnetic characteristics than nanospheres; nanocubes can fuse, forming nanowires that are no longer separable as individual nanoparticles.

The current lack of standardized definitions and legally recognized means of determining the size, distribution, and interactive characteristics of such tiny components in foods poses serious problems. Enforcement of any such standards has been hampered by the “cost and complexity of the equipment typically used to examine materials at” the nanoscale (e.g., atomic force or scanning electron microscopes). At a workshop that took place in the United Kingdom in 2010, scientists and legal experts attempted to tackle questions about consumer labeling requirements and definition of terms such as ‘insoluble’ or ‘manufactured.’

At a separate event, a roundtable debate facilitated by the United Kingdom’s Food Standards Agency, a director of research and development at Unilever offered “several factors needed to be taken into account when

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15 Glenn & Boyce, *Regenerative Nanomedicine*, supra note 6, at 304.
16 *Id.*
19 *Id.* at 1354.
21 See *id.*
devising a workable definition of nanomaterial.”22 He opined “[It must take into account] particle size; deliberate engineering; digestibility for nanomaterials used in foods and solubility in conditions of use for materials used in home/personal care products; [and] the characteristic properties of the nanomaterial compared to its non-nano forms.”23

Whatever definitions can be agreed upon will need to take into account the multiple shapes and surface chemistries, as well as the factors considered above.

C. A system of classification and categorization

This quandary is not exclusive to the food industry. It was only in late 2010 that the International Organization for Standardization (ISO) adopted the “Methodology for the Classification and Categorization of Nanomaterials.”24 This methodology presented a systematic approach to classifying and categorizing nanomaterials according to their size, chemical nature, properties, and characteristics.25 The methodology (referred to as ISO/TR 11360) “introduces a system called the ‘nano-tree’, which places nanotechnology concepts into a logical context by symbolizing relationships among them as a branching out tree. The most basic and common elements are defined as the main trunk of the tree, and nanomaterials are then differentiated in terms of structure, chemical nature and other properties.”26

Within the food industry, the application of nanomaterials and nano-based technology “may include nanoparticulate delivery systems (e.g. micelles, liposomes, nanoemulsion, colloids, biopolymeric nanoparticles, and cubosomes), food safety and biosecurity (e.g. nanosensors), and nanotoxicity.”27

22 Id.
23 Id.
24 Int’l Org. for Standardization, Nanotechnologies—Methodology For the Classification and Categorization of Nanomaterials 2 (2010).
26 Id.
How the ISO’s system of categorization and classification will impact the use of nanotechnology in food and food processing remains to be seen in the next few years as scientists, manufacturers, policy makers, and legal experts seek to apply this system to labeling, legislation, and/or regulation.

III. Nanofood

A. Definition

There have been few attempts at defining nanofood. Those attempts have been less than comprehensive, and the term has been used in different contexts in different journals. Although this definition may change as the new ISO standards are incorporated into everyday use, our proposed working definition for nanofoods is:

Food which has intentionally-produced materials in the order of 100-nanometres or less, and undergone one or more technological processes, at the nano-scale level, to manipulate the selection, extraction, storage, combination, transport, increase or decrease in one or more of its properties or characteristics, nutritional and organoleptic properties intrinsic to the substance or linked to specific physiological, social and economic properties of that substance.

This definition deliberately encompasses nanomaterials that are being consumed as well as those in the packaging or preparation, because distinctions are not always possible or useful. For example, different types of nanomaterials are incorporated into an organic polymer (such as chitosan) matrix to be sprayed onto fresh cut fruit, to extend

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shelf life.\textsuperscript{30} Nanoparticles of titanium dioxide are added to chocolate to avoid the separation of the cocoa butter from the cocoa solids.\textsuperscript{31} Other “edible coatings and films are currently used on a wide variety of foods, including fruits, vegetables, meats, chocolate, candies, bakery products, and French fries.”\textsuperscript{32} These often serve as “moisture, lipid, and gas barriers” and may be used to “improve the textural properties of foods or serve as carriers of functional agents such as colors, flavors, antioxidants, nutrients, and antimicrobials.”\textsuperscript{33} Until there is a better understanding of the size, distribution, and interactive characteristics of the materials and technology used, such distinctions are, arguably, irrelevant.

\section*{B. What’s for dinner?}

\subsection*{1. Now (2011)}

Nanoingredients already are appearing in food, but currently there are no laws requiring labeling.\textsuperscript{34} But until more is known about nanomaterials and their interactive quality, both inside the body and out, and the public is more accepting, no major food company is touting its use of nanomaterials. Here are just a few of the items that contain intentionally produced materials as described in the previous section:

\begin{itemize}
\item \textsuperscript{30} Olga Martín-Belloso \& Robert Soliva-Fortuny, \textit{Advances in Fresh-Cut Fruits and Vegetables Processing} 382 (2010); see also M\textsuperscript{a} Alejandra Rojas-Graü et al., \textit{The Use of Packaging Techniques to Maintain Freshness in Fresh-Cut Fruits and Vegetables: A Review}, \textit{44 Int’l J. Food Sci. \& Tech.} 875, 885 (2009).
\item \textsuperscript{31} Antonietta M. Gatti et al., \textit{Investigation of the Presence of Inorganic Micro- and Nanosized Contaminants in Bread and Biscuits by Environmental Scanning Electron Microscopy}, \textit{49 Critical Reviews Food Sci. \& Nutrition} 275, 281 (2009).
\item \textsuperscript{32} Jochen Weiss et al., \textit{Functional Materials in Food Nanotechnology}, \textit{71 J. Food Sci.} R107, R110 (2006).
\item \textsuperscript{33} \textit{Id.; see also} Hongda Chen et al., \textit{Nanotechnology in Nutraceuticals and Functional Foods}, \textit{603 Food Technology} 30, 30–6 (2006).
\item \textsuperscript{34} See Takhistova, \textit{supra} note 28 (which describes what the FDA currently requires in terms of labeling).
\end{itemize}
Functional foods, nutraceuticals, and fortified foods:\(^{35}\):

- Tip-Top Up Bread, made in Australia; bread with nano-capsules for fish oil, which contains health-enhancing Omega-3 fatty acids.\(^{36}\)
- Nanoteas, which are selenium enriched and available “in black, green, dark green, yellow, white and dark — may be mixed in cold or hot water.”\(^{37}\) The manufacturer claims, “the tenfold release of phytonutrients and selenium is effective in boosting adsorption of free radicals, cholesterol and blood fat and the annihilation of viruses through rapid penetration.”\(^{38}\)
- Enhanced vitamin and antioxidant sports drinks, touting the increased “bioavailability” (via ‘concentration’) of the “healthful micronutrients” of “cranberry juice, blueberry juice, wine” or cocoa.\(^{39}\)
- Milk, yogurt, dairy products, and wheat and rice-based foods fortified with iron nanoparticles.\(^{40}\)

Food additives, enhancers, and nutritional supplements:

- “Multinational German chemical manufacturer BASF produces nano-scale synthetic lycopene (a carotenoid) as a food additive for lemonade, fruit juices, cheese and margarine. Carotenoids are antioxidants and are converted into vitamin A in the body. Nano-scale carotenoids, according to BASF, are more easily absorbed

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35 Functional food (also referred to as nutraceuticals) is any food claimed to have a health-promoting or disease-preventing property beyond the basic function of supplying nutrients (e.g., provision of probiotics or antioxidants, promotion of cardiovascular benefits, relief of menopausal symptoms). See Chen et al., supra note 33, at 31.


37 Id.

38 Id.

39 Id.

by the body and increase product shelf life.”

- NanoCoffee Energy tablets and NaNo X9 Hardcore Pro Series (for sustained energy and power boost).

2. In the near future (2020 or sooner, hopefully)

Other practical applications in the works include the creation of sustained-release nutrition, which would be of tremendous use for sustenance in inaccessible areas (such as for the military or space travel). Sustained-release nutrition combined with the use of nanosensors to trigger satiation could be used in the treatment of obesity and related diseases, such as diabetes and high cholesterol. As promising as these developments sound, the technology has the potential to change one of the most difficult and controversial areas of the food industry: meat production. The world’s appetite for meat is growing, but current methods of mass meat production are unsustainable.

As chronicled in an extensive report by the Food and Agriculture Organization of the United Nations (FAO) and as detailed in other recent publications, the commercial livestock sector and particularly concentrated animal feeding operations (CAFOs) are environmentally

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41 Shelke, supra note 36.
45 Id.
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damaging and present a risk to public health. This issue “emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global.” The UN FAO Report explains that, “[t]his is not done simply to blame the rapidly growing and intensifying global livestock sector for severely damaging the environment but to encourage decisive measures at the technical and political levels for mitigating such damage.” One of the ways to mitigate the damage is to encourage policies that include environmental and health friendly technology development and promotion, “together with interventions in market development.”

The use of nanotechnology may present an alternative solution to this problem. It is just one of the newer technologies in development


50 FAO Report, supra note 48, at xx. See also, sources cited supra note 59.

51 Id. at iii.

52 Id. at 225.

“that ha[s] the potential not only to increase farm productivity but also to reduce the environmental and resource costs often associated with agricultural production.”\(^{54}\)

One area of food production that is gaining attention is the development of cultured meat, also referred to as “in vitro meat” or “vat meat.”\(^{55}\) In vitro meat could potentially bypass many of the public health issues that are currently associated with livestock-based meat.\(^{56}\) In fairly simple terms, cultured meat is created by adhering animal stem cells onto biodegradable edible scaffolds, and immersing them into a nutrient bath, causing the growth of muscle cells.\(^{57}\) This technology borrows an engineering technique that is used to replicate and reproduce cells in regenerative nanomedicine,\(^{58}\) and is presently capable of producing small yields of meat.\(^{59}\) Pork produced in this manner has been described as “sort of like a scallop, firm but a little squishy and moist.”\(^{60}\) However, when this process becomes commercially feasible, there will be benefits to humans

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**54** Chen & Yada, supra note 53, at 585.


**56** Thornton, supra note 46, at 2863-2864.


**58** See generally, Glenn & Boyce, supra note 6.

**59** See Szondy, supra note 57.

**60** Maria Cheng, *Scientists Turn Stem Cells Into Pork*, MSNBC.com (Jan. 15, 2010, 1:57:19 PM), http://www.msnbc.msn.com/id/34881174/ns/technology_and_science-innovation#.TzFjMM12mPU.
in terms of sustainability and environmental impact, and to animals in terms of reduction of suffering.\footnote{Thornton, \textit{supra} note 46, at 2863.}

Anecdotally, when the authors have mentioned the idea of cultured meat to friends and family, the reaction in many instances has initially been one of disgust and revulsion.\footnote{Or, as said Lucretius: “What is food to one, is to others bitter poison.” \textsc{Lucretius, \textit{De Rerum Natura}}, Book VI, Line 637.} That is somewhat ironic for a society that is perfectly fine with spraying cheese out of a can or eating a turkey hotdog or chicken nugget. These foods bear little resemblance to their antecedents, having been manipulated by consistency or taste into a form more convenient, or in the case of turkey hotdogs, into a “healthier” version of another highly processed product. We will probably see the first use of this “vat meat” in something like a sausage, although a burger may be on the horizon soon.\footnote{See Nick Collins, \textit{First Artificial Burger to Cost £250,000}, \textit{The Telegraph} (Sept. 1, 2011, 6:40 AM), \url{http://www.telegraph.co.uk/science/science-news/8733576/First-artificial-burger-to-cost-250000.html}.}

According to Paul Shapiro of the Humane Society of the United States, “\textit{in vitro meat has the potential to prevent an enormous amount of animal suffering.”}\footnote{James McWilliams, \textit{Eating (Synthetic) Animals}, \textit{The Atlantic} (June 30, 2010, 9:19 AM), \url{http://www.theatlantic.com/life/archive/2010/06/eating-synthetic-animals/58930}.} By reducing the number of CAFOs where animals are kept in tight, unsanitary quarters, it is obvious that it has the potential to reduce animal suffering as well.\footnote{Thornton, \textit{supra} note 46.}

In 2008, People for the Ethical Treatment of Animals (PETA) announced a $1 million prize to the first organization that could develop a commercially viable \textit{in vitro} meat product.\footnote{Collins, \textit{supra} note 63.} In a statement regarding the prize, PETA co-founder and president Ingrid Newkirk said, “\textit{We don’t mind taking uncomfortable positions if it means that fewer animals suffer.”}\footnote{John Schwartz, \textit{PETA’s Latest Tactic: $1 Million for Fake Meat}, \textit{N.Y. Times} (Apr. 21, 2008), \url{http://www.nytimes.com/2008/04/21/us/21meat.html?pagewanted=print}.} Newkirk’s rationale is consistent with PETA’s goals. Acknowledging that most people are not going to give up eating meat, PETA prefers that the meat come at a more humane price. While far-
reaching, PETA’s stance has drawn fire from more radical animal rights
groups for not going far enough.68

The Humane Society of the United States and PETA are in
conflict with other environmental organizations, which see cultured meat
as a step in the wrong direction.69 In an article in The Atlantic, Professor
James McWilliams counters the arguments, raised by Kate McMahon of
Friends of the Earth and Josh Viertel of Slow Food USA, that cultured
meat is a threat to small farms as it increases the gap between the food
source and the consumer.70 McWilliams argues:

Both McMahon and Viertel seem to forget that an
integral aspect of animal cruelty is not just how an animal
is treated while it’s alive but also the inconvenient truth
that—no matter how they are raised—the animals we eat
ultimately succumb to a violent death, one that they are
smart enough to anticipate, sentient enough to suffer
through, and, were they given an option, wise enough
to avoid. On some (philosophical?) level, the humanity
of the treatment is compromised the moment the death
blow lands—this is certainly “one of the problems with
cruelty to animals.”71

Another significant benefit to producing cultured meat is the
greatly reduced risk of deadly foodborne pathogens, such as E. coli and
Salmonella, both of which are introduced into the food supply as the result
of conditions at CAFOs and pose serious health risks.72 Given the limited
resources of the Food and Drug Administration (FDA), it is impossible to
perform adequate testing to prevent outbreaks of these microorganisms.73

The resources, out of necessity, go toward tracking down the sources of

68 McWilliams, supra note 64.
69 Id.
70 Id.
71 Id. (emphasis in original).
72 FAO report, supra note 48 at 16, 17.
73 See generally INST. OF MED. & NAT’L RESEARCH COUNCIL, ENHANCING FOOD
SAFETY: THE ROLE OF THE FOOD AND DRUG ADMINISTRATION (Robert B.
php?record_id=12892#toc.
outbreaks.\textsuperscript{74} It is vastly easier to monitor a food production operation than a farm.\textsuperscript{75} By moving the operation from the feedlot to the factory, there is the opportunity for better FDA oversight.

In addition, producing cultured meat is far more sustainable than traditionally farmed meat. According to a lifecycle assessment performed by Tuomisto and Teixeira de Mattos, cultured meat uses 35 to 60 percent less energy, emits 80 to 95 percent less greenhouse gas, and uses 98 percent less land than traditional agriculture.\textsuperscript{76} In a tightening global energy economy, these savings may make it possible for meat/protein scarce communities to have access to an inexpensive, environmentally friendly and sustainable commodity.

\textbf{C. Feeding the world’s hungry}

Nanotechnology has the potential to provide enormous benefits to poor communities worldwide. At the basic level, the issue of food insecurity can be mitigated by the benefit of increasing crop yields on small subsistence farms where the farmers generally consume most of what they grow.\textsuperscript{77} There is, of course, the question of how to get such technology to this audience. Poor countries face roadblocks and challenges with any effort at introducing nanotechnology into their agricultural programs. Governments, research institutions and private investors are reluctant to financially support “expensive, potentially risky or uncertain research.”\textsuperscript{78} Of the ten most promising nanotechnology applications likely to benefit the poor in developing countries, agricultural production ranked second, and food processing and storage ranked sixth.\textsuperscript{79} Each of the previously discussed technologies can play a role in meeting this goal. These include the use of nanoherbicides and nanofertilizers for crops as well as nanofeed additives such as bioactive polystyrene nanoparticles to reduce food-borne

\begin{itemize}
\item \textsuperscript{74} Id.
\item \textsuperscript{75} Id.
\item \textsuperscript{76} Hanna L. Tuomisto & M. Joost Teixeira de Mattos, \textit{Environmental Impacts of Cultured Meat Production}, 45 ENVTL. SCI. & TECH. 6117, 6117 (2011).
\item \textsuperscript{77} See generally, \textit{The Royal Society}, supra note 47.
\item \textsuperscript{78} Gruère et al., supra note 53, at 9-10.
\item \textsuperscript{79} Fabio Salamanca-Buentello et al., \textit{Nanotechnology and the Developing World}, 2 PLoS MEDICINE 383, 385 (2005).
\end{itemize}
pathogens in poultry. In addition, nanoporous zeolites can be used to facilitate “slow release and efficient dosage of water and fertilizer.” The benefits in terms of food security far outweigh the obstacles, and efforts need to be directed at developing partnerships between those nations most actively involved in advancing nanotech approaches in agriculture.

IV. FOOD SAFETY, STORAGE, TRANSPORT

Nanotechnology has many possible applications to food preservation and transportation. Three areas that are relatively non-controversial are “sensing volatiles, detecting microorganisms, and improving packaging and product information.” An example of a device that could be used is a nanotechnology-based electronic nose, which could sense contamination or early detection of pests (which, in turn, “would help agricultural production”). Such a device could also be used in the monitoring and control of processes such as baking, pasteurizing, or vacuum sealing, or in quality assurance (for example, freshness or early warning about spoilage in a refrigerated environment).

One of the applications that the food industry is employing is the use of microcomposite clay coatings to decrease gas permeability and opacity in bottles. The polymer composites incorporating clay nanoparticles are among the first nanocomposites to emerge on the market as improved materials for food packaging.

Nanoclays are nanoparticles of layered mineral silicates with a specialized structure, characterized by platelet morphology. The platelets have submicron dimensions, excepting their thickness, which is only about one nanometer. These platelets force gases to follow a

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80 Gruère et al., supra note 53, at 4.
81 Id.
82 Inst. of Med., supra note 44, at 37.
83 Id. at 37-38.
84 Id.
86 Id.
tortuous path through the polymer greatly slowing their transmission. Nano-layer structure of clays thus increases the path of diffusion that penetrating molecules of gases or other substances must take and significantly improves the polymer’s barrier properties.87

Nanoclays are being incorporated into plastic beer bottles to aid in packaging stability, as well as reduce oxygen permeation to nearly the extent of glass bottles.88 European Union-funded project ObservatoryNano gives a detailed illustration of the future of the beverage bottle: a picture of a fruit punch bottle with nanotechnology applications that are currently in use or in development.89 The applications illustrated include nutraceuticals (e.g., Aquanova, DuraFizz, Nutraselease); gas barrier coatings (e.g., NanoPack, nSec); antimicrobial coatings (e.g., Nanux, Bio-Gate); radio frequency identification (RFID) tags; UV-blocking plastic (e.g., NanoProducts, Evonik); and food quality sensors (e.g., Hanson Technologies, pSiNutria, Nanoident).90

Use of silver nanoparticles in all manner of appliances for their antimicrobial properties has recently become re-popularized.91 In the late 19th century, the botanist von Nägeli discovered that minute concentrations of silver contained microbicidal properties,92 but with the discovery of penicillin and other antibiotics, this common medicinal remedy fell into disuse.93 With the advent of “super-bugs” and strains of bacteria showing a growing resistance to antibiotics, silver has come back into fashion.94 There are a number of companies incorporating nano-silver

87 Id.
88 Id.
90 Id.
93 Luoma, supra note 91, at 14.
94 See id. at 26.
particles into their products. Samsung, for example, has introduced a Silver Nano Health System, which includes a refrigerator, air conditioner and “silver wash.”

Silver is also incorporated in such items as cutting boards and food storage containers. A web search of “silver nano food storage” returned several thousand hits. However, concerns about the safety of the use of nanosilver particles remain. Studies suggesting that nanosilver particles interfere with DNA replication and interact directly with the genome, evidence of the harm nanosilver particles cause to aquatic environments and creatures, and the filing of a lawsuit by a consumer group seeking the removal of more than 200 nanosilver products from the market all serve as a reminder that nanosilver particles are not yet considered entirely safe.

Despite consumer wariness about nanofoods and despite the concerns mentioned about the safety of nanosilver, the initial indications are that consumers are more comfortable with the application of nanotechnology to food storage and the use of silver nanoparticles “to disinfect and deodorize surfaces in kitchens, bathrooms and even baby clothes.”

95 Id. at 11-12.
97 Luoma, supra note 91.
98 http://www.google.com/ (type “silver nano food storage” into the search bar; then click “Google Search”).
103 Luoma, supra note 91.
IV. CURRENT LAWS AND POLICY RECOMMENDATIONS

A. Case law

Case law on issues of safety or regulation in nanotechnology is nil or non-existent. However, we may, by analogy, extrapolate the approach the United States courts would take to such issues by considering the case of Monsanto Co. v. Geertson Seed Farms.104 The case arose from the struggle over the regulatory status of Roundup Ready alfalfa (RRA), a crop genetically engineered by petitioner Monsanto to tolerate glyphosate, the active ingredient in the herbicide Roundup.105 “The United States has never passed legislation focused on regulating biotech crops; instead the United States Department of Agriculture (USDA) regulates biotech crops under its rules governing ‘plant pests.’”106 Under the Plant Protection Act (PPA), the Secretary of Agriculture or his designee, which in this case was the Animal and Plant Health Inspection Service (APHIS), was given authority to promulgate regulations governing the introduction of genetically modified organisms (GMO) that are or are believed to be plant pests.107 Monsanto’s RRA was initially classified as such a GMO.108 In 2004, Monsanto filed a petition with APHIS, seeking a determination under the PPA that RRA was not subject to the regulations.109 Under the National Environmental Policy Act (NEPA), such a petition triggers several procedural requirements before an exemption to the regulations is granted.110 Those procedural requirements include an environmental assessment (EA) and, depending on the assessment, an environmental assessment.

104 Monsanto Co. v. Geertson Seed Farms, 130 S. Ct. 2743 (2010)
108 Id. at 2750.
109 Id.
110 Id.
impact statement (EIS).\textsuperscript{111} Although APHIS prepared an EA, they did not prepare an EIS before granting Monsanto’s petition to deregulate RRA.\textsuperscript{112}

In 2006, Geertson Seed Farms and a number of environmental groups filed suit against the Secretary of Agriculture and other federal officials, seeking injunctive relief.\textsuperscript{113} In order to grant a permanent injunction, four factors must be satisfied:

1. The plaintiff has to have suffered an irreparable harm.
2. The remedies available by law “are inadequate to compensate for that injury.”
3. The court needs to “consider the balance of hardships between the plaintiff and defendant.”
4. The public interest would not be harmed by this permanent injunction.\textsuperscript{114}

In the lower courts, where injunctive relief was granted and upheld, it was noted, “irreparable harm already existed in the case, as irreversible contamination of conventional and organic alfalfa had already occurred from planting and the cross-pollination of Roundup Ready alfalfa.”\textsuperscript{115}

The United States Supreme Court reversed the injunctive relief issued by the lower courts and held that the lower courts had ruled incorrectly when they enjoined the planting of RRA because of claims RRA might be environmentally unsafe.\textsuperscript{116} The Court explained that the injunctive relief was not an appropriate judicial remedy because the respondents could not “show that they will suffer irreparable injury if APHIS is allowed to proceed with any partial deregulation . . . . partial deregulation need not cause respondents any injury at all . . . [I]f the scope of the partial deregulation is sufficiently limited, the risk of gene flow to their crops could be virtually nonexistent.”\textsuperscript{117} The Court went on further to explain that if and when the APHIS pursues a partial deregulation that

\begin{thebibliography}{9}
\bibitem{111} Id.
\bibitem{112} Id.
\bibitem{113} Id. at 2750-51.
\bibitem{114} Id. at 2756.
\bibitem{115} Straka, \textit{supra} note 105, at 384.
\bibitem{116} Monsanto, \textit{supra} note 107, at 2757-58.
\bibitem{117} Id. at 2759-2760.
\end{thebibliography}
arguably runs afoul of NEPA, respondents could file a new action seeking appropriate relief.\textsuperscript{118}

Considering the Supreme Court was not persuaded in this case that irreparable harm would occur with the deregulation of GMOs, it seems unlikely that there will be any action on cases such as the one mentioned in the previous section, where consumer groups sought to have nanosilver products removed from the shelves.\textsuperscript{119} Such an action would be particularly difficult as 1) nanomaterials are not currently being regulated by one agency, but by a multitude of agencies (see Section B, below) and 2) until the newly adopted ISO standards are recognized, adopted, and incorporated into United States laws, adequate definitions do not exist.\textsuperscript{120}

\textbf{B. Acts, rules, regulations}

As discussed previously in section I.A, the novel characteristics of nanomaterials strongly suggest that existing laws need to be modified or replaced. The Toxic Substances Control Act (TSCA)\textsuperscript{121}, and Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)\textsuperscript{122}, both administered by the Environmental Protection Agency (EPA); the Federal Food, Drug, and Cosmetic Act (FDCA)\textsuperscript{123}, administered by the FDA and EPA; the Occupational Safety and Health Act\textsuperscript{124}, administered by the Occupational Safety and Health Administration (OSHA); and the Consumer Product Safety Act (CPSA)\textsuperscript{125}, administered by the Consumer Product Safety Commission (CPSC), are just a handful of the acts that have mechanisms for regulating nanotechnology risks. Yet, in the opinion of the authors, none of these considered or were designed with the peculiar characteristics of nanotechnology in mind.

As discussed earlier in section II.B, the acceptance and adoption of the ISO’s Methodology of Classification and Categorization of Nanomaterials will go a long way in prompting legislators and policy makers, in the United States, to consider and adopt appropriate definitions.\textsuperscript{126}

\begin{itemize}
\item \textsuperscript{118} \textit{Id.} at 2760.
\item \textsuperscript{119} See Int’l Ctr. for Tech. Assessment, \textit{supra} note 101.
\item \textsuperscript{120} Glenn & Boyce, \textit{supra} note 6.
\item \textsuperscript{121} 15 U.S.C. § 2601 et seq., (1976).
\item \textsuperscript{122} 7 U.S.C. § 136 et seq., (1996).
\item \textsuperscript{123} 21 U.S.C. § 301 et seq., (1938).
\item \textsuperscript{124} 29 U.S.C. § 651 et seq., (1970).
\item \textsuperscript{125} 15 U.S.C. § 2051 et seq., (1972).
\end{itemize}
States as well as other countries, to revise the rules, regulations, and laws intended to monitor and regulate nanotechnology risks.\textsuperscript{126}

\textbf{C. Some other approaches}

Two international reports have recently come out that have several recommendations that could and should be adopted in the United States:

A general moratorium on engineered nanomaterials in food and food packaging is not currently necessary.\textsuperscript{127}

Existing food regulations should be adapted to reflect changing definitions.\textsuperscript{128}

Ongoing, transparent, credible dialogue between manufacturers, consumers and parties of interest; “dialogue platforms on benefits and risks as well as a social communication process on the handling of nanomaterials in the food sector should . . . form an integral component of the future development process.”\textsuperscript{129} Further, consumers “are more likely to look more favourably on its use when they perceive a real benefit to them.”\textsuperscript{130}

As discussed in the previous section, after incorporation of the ISO standards into law, a revisitation to the re-creation of a comprehensive regulatory framework would be warranted.

\begin{itemize}
\item \textsuperscript{126} Glenn & Boyce, \textit{supra} note 6.
\item \textsuperscript{127} M\textsc{artin} M\textsc{öller} \textsc{et al.}, \textsc{Ctr. for Tech. Assessment, Nanotechnology in the Food Sector} 144 (2009), \textit{available at} http://www.ta-swiss.ch/en/nano food/.
\item \textsuperscript{128} \textit{Id.} at 145.
\item \textsuperscript{129} \textit{Id.} at 151.
\end{itemize}
V. Conclusion

In conclusion, the application of nanotechnology to agriculture, food, food processing, and food storage holds many promises. It may satisfy the needs and demands of a growing global population, and it may reduce or prevent the needless suffering of sentient creatures by helping to eliminate CAFOs. These applications would not replace the need for small family farms. The technologies could be used to extend and amplify production from the small family farms, resulting in a move away from centralization and back to localization.

Of course, the technology is not without its perils; regulation and oversight is needed. Adoption and incorporation of the ISO standards as quickly as possible is essential, so that a regulatory framework can be created. Much more study is needed about the impact of nanomaterials and nanotechnologies within the body and on the environment.

To quote New York Times columnist Mark Bittman, let us “[r]einvest in research geared toward leading a global movement in sustainable agriculture, combining technology and tradition to create a new and meaningful Green Revolution.”131 With proper monitoring and regulation by the international community, nanotechnology, within the context of converging technologies, can find an appropriate place at the dinner table and play a major role in the emerging Green Revolution.

BLOCK THE INSANITY: LEVERAGING CABLE FRANCHISING AUTHORITY TO GRANT PARENTS THE ABILITY TO BLOCK ADVERTISING TARGETING YOUNG CHILDREN

Robert J. L. Moore*

I. INTRODUCTION

For decades, the public health community has sought to curtail the excess of advertising targeting children, with limited success. Despite the best efforts of advocates,\(^1\) advertising today is more effective and pervasive than ever before,\(^2\) and the ubiquity and cogence of television advertising targeting young children contributes greatly to the obesity epidemic currently afflicting our children.\(^3\) A new approach is warranted.

New approaches must be assessed in terms of feasibility and their potential for synergy with other public health efforts. Optimally,

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advocates would avoid employing any approach that either was not feasible or potentially undermined some of the long-term underpinnings of the public health movement. For example, given that federal oversight of public health matters has been intermittent and unreliable, advocates should take pains not to abet, even unwittingly, federal efforts to restrict states’ police powers.

This article sets forth a new proposal consonant with these goals: advocates should lobby cable franchising authorities to require that all future franchising agreements with cable providers be contingent on the provider granting parents the ability to block advertising targeting young children though the use of V-Chips. This proposal is a feasible intervention that can be advanced on the local level. If key localities or a critical mass of all localities adopted the proposal, the amount and efficacy of ads directed at children would stand to decrease nationally, resulting in a concomitant decrease in demand amongst children for the unhealthy foods that are the subject of most of this advertising.

This proposal endeavors to bridge the divide between those who argue that lack of individual responsibility is largely to blame for this public health crisis and those who contend that other actors, such as advertisers, at least share in the blame. The V-Chip was designed to protect young minds from images and messaging that their parents consider harmful. Courts and proponents of the V-Chip have agreed that the technology strikes a fair balance between First Amendment considerations and parents’ needs to monitor their children’s media consumption. Application of V-Chip technology to an additional segment of harmful messaging (e.g., advertising to children) is, this piece posits, a logical and reasonable response to the public health crisis with which we are confronted.

After outlining the proposal in detail, including the procedural and physical mechanisms by which it can be implemented and the


statutory authority supporting it, this piece will explain the necessity of taking action in this vein. The piece will then discuss the necessity of an intervention targeting the childhood obesity epidemic by limiting the unhealthful messaging that reaches children and delineate why this proposal in particular is appropriate. Finally, the piece will debunk arguments that opponents of this measure are likely to make.

II. THE PROPOSAL: AS PART OF CABLE FRANCHISE NEGOTIATIONS, STATES OR MUNICIPALITIES SHOULD REQUIRE FRANCHISEES TO EMPOWER V-CHIPS WITH THE ABILITY TO BLOCK ADVERTISING TARGETING YOUNG CHILDREN AS A DEFAULT SETTING

This piece posits that, as a means of combating the childhood obesity epidemic, municipalities, through their cable franchising authorities, can and should grant parents the ability to filter out unwanted and harmful advertising. The entire country has suffered a significant increase in childhood obesity rates, with predictable results for the health and financial wellbeing of its residents.6 Advertising that targets children under the age of seven contributes mightily to this problem—most television commercials targeting that age group are for unhealthy foods, and children that young lack the mental faculties to discern the persuasive intent of advertising.7

Under federal law, municipalities retain the ability to negotiate with cable providers for franchise rights. Franchise rights include the power to provide cable service to all or some of that municipality and reap the monetary benefits.8 In light of the deleterious effect advertising to children has on the public health, municipalities should use their cable franchising authority to force any provider of cable television seeking to do business within their borders to grant parents the ability to screen commercials that target young children.

A. Procedural and Technological Background

1. The nature of the authority municipalities have to franchise cable providers

Federal law (specifically, those statutes amended as part of the Cable Communications Policy Act of 1984 (CCPA)) grants states the ability to contract with cable operators to provide service within their geographical bounds.9 Most states delegate this power to municipalities.10 Pursuant to this power, franchising authorities—municipal agencies empowered to negotiate with cable providers—can negotiate with operators to ensure that cable service in the municipality meets community needs.11 The resulting contracts, known as franchising agreements, generally last for ten years.12 When the initial contract expires, the agreement can be renewed.13 Federal law prescribes the method for renewing the franchising agreement, a procedure that entails several steps in addition to those prescribed for the granting of franchises.14

Franchising authorities, the composition of which is determined by each municipality, have limited abilities to make demands of would-be franchisees. “[T]he franchising authority may enforce provisions for broad categories of video programming (e.g., children’s programming;
programming in a particular foreign language; programming which is of primary interest to a particular minority group; news and public affairs programming; sports programming).”

While “a franchising authority is not permitted to establish particular service requirements which involve the provision of specific information to subscribers (e.g., a particular news service, a specific program, etc.)” some restrictions on content are permissible. 47 U.S.C. § 544(b)(2)(B) “makes a bright-line distinction, seemingly guided by First Amendment concerns, in allowing the franchise authority to regulate non-expressive aspects of ‘services,’ . . . while precluding the franchise authority from regulating expressive content of cable services, such as criteria that would require the franchisee to tailor program content to reflect the franchise authority’s aesthetic faculties.” However, franchising authorities retain the discretion to prohibit any content that is “obscene or . . . otherwise unprotected by the Constitution of the United States.”

The House of Representatives and Senate Reports on the CCPA make clear that the legislators intended to allow franchising authorities to bar, via the franchising process, any programming not constitutionally protected. Per the House Report, the CCPA “would also permit changing constitutional interpretations to be incorporated into the standard set forth in [47 U.S.C. § 544(d)(1)], should those judicial interpretations at


17 Few courts have interpreted the extent of this limitation. See Jones Intercable, Inc. v. City of Stevens Point, 729 F. Supp. 642, 648 (W.D. Wis. 1990); see also Chi. Cable Commc’ns v. Chi. Cable Comm’n, 678 F. Supp. 734, 747 (N.D. Ill. 1988) (“We have found no judicial decision discussing the meaning of ‘broad categories of video programming.’”); but see Cablevision Sys. Corp. v. Town of E. Hampton, 862 F. Supp. 875, 886 (E.D.N.Y. 1994) (“franchising authorities are precluded from enforcing franchise requirements that usurp the cable operator’s power to determine the details and particulars of the provision of cable service.”), aff’d, 57 F.3d 1062 (2d Cir. 1995). No court in the First Circuit has ruled on the precise meaning of this statutory term.


some point in the future deem additional standards, such as indecency, constitutionally valid as applied to cable.” 21 Likewise, the Senate Report indicates that the CCPA “would apply to future U.S. Supreme Court decisions which may find that other kinds of speech are unprotected under the Constitution.” 22

2. Procedure for granting a franchise

Under federal law, no entity may provide cable television service to a jurisdiction unless the system operators first receive a franchise to operate in that jurisdiction. 23 In awarding a cable franchise, the franchising board must ensure that no group is left without access to cable due to income levels. 24 In addition, the franchising authority must give the cable provider a reasonable amount of time to implement a system that is capable of providing cable services in the area. 25 The franchising authority may also require that the applicant provide assurance that adequate public access, educational, and government channel capacity will be made available, and that the provider has the “financial, technical, and legal qualifications to provide cable service.” 26

A would-be cable provider in an area begins the franchising process by submitting an application to the appropriate franchising authority. 27 This application must include the cable provider’s bid for service, along with any information required by state or local law. 28 The franchising board may not require an applicant to engage in any negotiations prior to filing of this application. 29 If an applicant has existing authority to provide cable services in the proposed area, the franchising authority must grant or deny the application within ninety days; if the applicant does not have pre-existing authority, the franchising authority must act within 180 days. 30 If the franchising authority fails to act within the time

28 Id.
29 47 C.F.R. § 76.41(e).
30 47 C.F.R. § 76.41(d).
period specified, the applicant will be authorized to provide cable service for an interim period, based on the terms set forth in its application.\textsuperscript{31}

The franchising process contemplates negotiations between a franchising authority and a would-be franchisee over certain terms of the franchise.\textsuperscript{32} For example, franchising authorities may demand that franchisees provide certain facilities and equipment for public access channels.\textsuperscript{33} Franchising authorities are also empowered to negotiate regarding “broad categories of video programming or other services.”\textsuperscript{34}

“...judicial interpretation of [the statutory term] ‘broad categories of video programming’ is sparse.”\textsuperscript{35} As a rule, while:

the franchising authority may enforce provisions for broad categories of video programming (e.g., children’s programming; programming in a particular foreign language; programming which is of primary interest to a particular minority group; news and public affairs programming; sports programming) ... a franchising authority is not permitted to establish particular service requirements which involve the provision of specific information to subscribers (e.g., a particular news service, a specific program, etc.).\textsuperscript{36}

Further, federal law:

makes a bright-line distinction, seemingly guided by First Amendment concerns, in allowing the franchise authority to regulate non-expressive aspects of ‘services,’ – such as requiring that notice be given about the

\textsuperscript{31} 47 C.F.R. § 76.41(e).
\textsuperscript{33} 47 U.S.C. § 544(b)(1).
\textsuperscript{34} 47 U.S.C. § 544(b)(2)(B).
\textsuperscript{35} Jones Intercable, Inc. v. City of Stevens Point, 729 F. Supp. 642, 684 (W.D. Wis. 1990).
\textsuperscript{36} H.R. Rep. No. 98-934, supra note 16, at 4705-06; see also Cablevision Sys. Corp. v. Town of E. Hampton, 862 F. Supp. 875, 886 (E.D.N.Y. 1994) (“franchising authorities are precluded from enforcing franchise requirements that usurp the cable operator’s power to determine the details and particulars of the provision of cable service”).
franchisee’s changes in programming —, while precluding the franchise authority from regulating expressive content of cable services, — such as criteria that would require the franchisee to tailor program content to reflect the franchise authority’s aesthetic faculties.  

For example, franchising authorities may not dictate the precise channel lineup the franchisee must offer. Franchising authorities, however, are free to demand restrictions on content that is “obscene or [is] otherwise unprotected by the Constitution of the United States.”

3. Procedure for franchise renewal

Federal law sets out formal and informal procedures by which a franchising authority and a provider that is already a franchisee may negotiate renewal of their cable franchise agreement. To begin formal proceedings, either the franchising authority or the franchisee sends notice to its counterpart thirty to thirty-six months before the end of the current franchise agreement. Most franchising authorities send this notice even if they intend to engage in informal proceedings—if those informal proceedings fail to culminate in a new agreement, formal proceedings remain viable. Most cable franchisees also submit formal requests for renewal during the appropriate time period.

Within six months of either party invoking formal negotiations, the franchising authority must initiate proceedings. Though federal law does not specify what precisely constitutes the initiation of proceedings, most franchising authorities begin with public hearings to gather

38 See Jones Intercable, 729 F. Supp. at 649.
43 See id.
information pertinent to renewal.45

At some point during formal proceedings, the franchising authority must hold public hearings.46 The goals of these hearings are to identify the community’s future cable-related needs and interests, to review the cable operator’s past performance, and to consider the operator’s current proposal.47 To that end, the franchising authority must publicize the hearings and solicit comments from community members and interested parties.48 In addition, the current franchisee must have an adequate opportunity to participate.49 Once the hearings have concluded, the franchisee may submit a proposal that it feels meets the community’s needs as crystallized during the hearings.50

Within four months of receiving the franchisee’s proposal for renewal, the franchising authority must issue a written decision granting or denying (on a preliminary basis) the proposal and explaining the authority’s rationale.51 The franchisee and franchising authority usually try to reach a compromise during this four-month period.52

Should the franchising authority deny the proposal, either party may invoke administrative proceedings.53 Federal law does not specify the format of these proceedings, but it does list the four issues that must be considered.54 Most relevantly, administrative proceedings must consider whether “the operator’s proposal is reasonable to meet the future cable-related community needs and interests, taking into account the cost of meeting such needs and interests.”55 The franchising

45 Gallucci, supra note 42, at 123.
47 Gallucci, supra note 42, at 122-23.
52 Gallucci, supra note 42, at 123.
54 See 47 U.S.C. § 546(c)(1)(A)-(D) (the franchising authority should consider whether: (A) “the cable operator has substantially complied with the material terms of the existing franchise and with applicable law;” (B) “the quality of the operator’s service . . . has been reasonable in light of community needs;” (C) “the operator has the . . . ability to provide the services . . . as set forth in the operator’s proposal;” and (D) “the operator’s proposal is reasonable to meet the future cable-related community needs and interests . . .”).
authority may deny the proposal only after making an adverse finding regarding one or more of the four issues under consideration. Any franchisee whose proposal for renewal is denied may appeal to state or federal court.

4. The V-Chip

The V-Chip is a device that enables users to screen out various types of programming. Using ratings broadcast alongside programming signals, the V-Chip, at the user’s command, blocks programming by rating—for example, parents can prevent their children from accessing television programming with too much violence. Since the advent of cable television, Congress has worried that unsupervised children will watch inappropriate television programming. Congress has repeatedly acted to grant parents more control over what their children watch when unsupervised. For example, the Cable Communications Act of 1984 forced cable providers to issue “lock-boxes” (cable boxes with certain channels blocked out entirely) upon customer request, and the Cable Act of 1992 imposed restrictions

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57 47 U.S.C. § 546(e)(1); see also 47 U.S.C. § 555(a).
59 Id.
60 See, e.g., Telecommunications Act of 1996, Pub. L. No. 104-104, § 551(a)(4) & (6), 110 Stat. 56, 140 (codified at 47 U.S.C. § 303) (“[C]hildren exposed to violent video programming at a young age have a higher tendency for violent and aggressive behavior later in life than children not so exposed. . . . [C]hildren are affected by the pervasiveness and casual treatment of sexual material on television, eroding the ability of parents to develop responsible attitudes and behavior in their children.”).
61 Cable Communications Policy Act of 1984, Pub. L. No. 98-549, § 624(d)(2)(A), 98 Stat. 2780, 2790 (codified at 47 U.S.C. § 544(d)(2)) (“In order to restrict the viewing of programming which is obscene or indecent, upon the request of a subscriber, a cable operator shall provide (by sale or lease) a device by which the subscriber can prohibit viewing of a particular cable service during periods selected by that subscriber.”); see also Denver Area Educ. Telecomms. Consortium, Inc. v. FCC, 518 U.S. 727, 758 (1996) (discussing 47 U.S.C. § 544(d)(2), the Court stated that “[t]his device—the ‘lockbox’—would help protect children by permitting their parents to ‘lock out’ those programs or
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on the content of public access channels (channels controlled by the community). The V-Chip represents the latest iteration of this trend.

V-Chips work by interpreting signals that accompany programming’s closed captioning, the subtitles intended for the hearing-impaired. V-Chips scan that signal, known as the “vertical blanking interval,” for values that correspond to certain ratings. A V-Chip’s detection of a rating over the threshold set by the parental controls will cause the V-Chip to block the offending signal.

Courts have lauded the V-Chip as a sensible solution to the problem posed by children watching large amounts of television without parental supervision. It neatly balances the needs of parents with the demands of the First Amendment. In Denver Area Educational Telecommunications Consortium, Inc. v. FCC, a plurality of the Supreme Court invalidated a provision of the Cable Act of 1992 that required cable operators to censor public access channels. Though the plurality recognized the merit of parents’ concerns about television content, it distinguished this heavy-handed legislation from less invasive efforts. The plurality singled out the V-Chip as technology that both meets the requirements of parents and seems to pass constitutional muster.

See, e.g., Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, § 10(c), 106 Stat. 1460, 1486 (granting the FCC the authority to “promulgate such regulations as may be necessary to enable a cable operator of a cable system to prohibit the use . . . of any channel capacity of any public . . . facility for any programming which contains obscene material . . .”).


Fed. Commc’n, supra note 63.

Id.


Id. at 755-56.

The issue of the constitutionality of the V-Chip was not before the Court that day, but the Court did mention that the legislation requiring widespread
Other appellate courts have gone further. In *Fox Television Stations v. FCC*, the Second Circuit considered an appeal of a fine levied against a broadcaster for airing obscene content.69 The broadcaster argued that the Federal Communications Commission (FCC), the agency that issued the fine, lacked constitutional authority to issue such a fine because “the advent of the V-chip and parental ratings system . . . provide[s] a less restrictive alternative to the FCC’s indecency ban.”70 The Second Circuit noted the validity of this argument, stating that “technological advances may obviate the constitutional legitimacy of the FCC’s robust oversight.”71 By holding that V-Chips may one day rightfully usurp the censorship role now played by the FCC, the Second Circuit distinguished between censorship exercised by governmental agencies and censorship via V-Chip. The Second Circuit reaffirmed that holding in 2010.72

Though the prevalence and utility of V-Chip technology would lead one to believe that parents now have the means of protecting their children from harmful programming, broadcast indecency remains a concern for many.73 The primary reason why the V-Chip has not achieved its purpose is underuse.74 Parents, by and large, either do not know about the V-Chip or do not know how to use it.75

69 *Fox Television Stations, Inc. v. FCC*, 489 F.3d 444, 446 (2d Cir. 2007), rev’d on other grounds, 556 U.S. 502 (2009).

70 *Id.* at 466.

71 *Id.*


B. Specifics of This Proposal

Franchising authorities should be able to demand that franchisees provide parents with ways to block advertising targeting young children as part of the franchise agreement negotiating process. This proposal conveys means by which an authority may achieve this aim.

A franchising authority should require franchisees to empower the V-Chips already installed in all televisions and cable boxes manufactured since 2000 with the ability to block, in addition to programming, advertisements targeting children under age eight. The V-Chip determines which programming to block by examining the ratings signal accompanying the program. Accordingly, advertising transmitted by franchisees will need to be accompanied by ratings denoting target demographics that will inform the V-Chip whether to block the advertising. Every time a franchisee airs an unrated ad, the franchising authority could sue the franchisee for breach of contract, with liquidated damages specified in the franchising agreement.

Franchising authorities should make sure that the V-Chip automatically blocks out advertisements targeting young children. V-Chips are woefully underused. Many parents either do not understand how to use the V-Chip or do not realize they have one. The success of this proposal should not hinge on the ability of parents to defy statistics and embrace V-Chip technology.

This proposal is designed to ensure that franchising authorities create and enforce standards that achieve their goals without affording content or cable providers legitimate fodder for objection. If the standards are vague or overbroad, or if they are not applied in a fair manner, a court may invalidate the applicable franchise agreement.


Fed. Commcn’s Comm’n, supra note 63.


See id.
Accordingly, the franchising authority must consider: (1) how to set appropriate standards for detecting ads that target children; (2) what entity will apply those standards; and (3) what the procedure will be for applying those standards.

1. Crafting standards

Standards should be specific enough to allow for an administrating body to apply them in a fair, predictable manner. This can be accomplished by looking to objective standards already developed for adducing the target demographic of advertising. Franchising authorities should require, as part of the franchising process, that cable providers furnish either the list of advertisements targeting children under age eight or the means by which they make that determination. Cable providers already distinguish between advertising demographics when they sell directed advertising. DirecTV, for example, sells targeted advertising via its website. DirecTV grants visitors to its website the ability to select target demographics (such as “Kids Cluster”) and view all programs targeting the chosen demographic.

One component of any franchise agreement with a cable provider could be the sharing of the algorithm the franchisee uses to differentiate target demographics for directed advertising. In the alternative, the

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82 Id.
83 Comcast boasts on its website of its targeted advertising. See Geographic Targeting Featuring Adtag™ & Adcopy™, Comcast Spotlight, http://www.comcastspotlight.com/advertising-solutions/on-air/geographic-targeting (last visited Dec. 28, 2011) (“Comcast Spotlight advertisers can utilize two advanced targeted local TV applications, Adtag and Adcopy, to simultaneously broadcast different commercials to different market segments—all with one buy!”).
84 Cable providers clearly have accumulated this information. As of December
provider could simply share the list of advertising it has rated as targeting children under age eight.

Additional guidance as to standards can be gleaned from various groups that already devise objective standards that purport to distinguish television commercials whose true target audience is young children from those that target other demographics. For instance, the Children’s Advertising Review Unit (CARU), the self-regulatory arm of the child-advertising industry, promulgates standards that it allegedly uses to police advertisements. Self-regulatory standards like these are often published. Even if these standards are too vague or lax to meet expectations, they can provide insight on information that standards should encompass.

2. Administration of standards

To ensure that ads targeting children are rated as such, and therefore subject to filtering via V-Chip, franchising authorities could require all ads to be rated before broadcast. This strategy is not as work-intensive as it may appear at first glance. Ads targeting children are likely to air at certain times, during certain programming, and on certain channels. Standards

2011, for example, the Comcast Spotlight website was offering to make this information available to advertisers. See Advertising Analytics, Comcast Spotlight, http://www.comcastspotlight.com/sites/Default.aspx?pageid=2485&siteid=62&subnav=3 (last visited Dec. 28, 2011) (“Before you can properly sell to your audience, you must understand what makes them tick: their needs, their viewing habits, their purchase behaviors, etc. And only the largest advertisers used to be privy to this kind of market intelligence. Now, Comcast Spotlight can share this knowledge with all of our advertisers—both large and small—all at no cost.”).


can take advantage of this fact and evaluate whether an ad targets children by the times, programming, and channels on which it most frequently airs. Standards of this sort would be mechanical; in fact, they could be administered by algorithm. If, for example, the franchising authority and franchisee determined through negotiations that any advertising that appeared exclusively on children’s programming would be deemed as targeting children (and therefore subject to blockage by V-Chip), the franchising authority would need to do little to implement this standard. The franchisee itself could regularly compile a list of advertisements that meet this definition of targeting children and rate advertisements accordingly. The franchising authority then could perform spot-checks of the listed advertisements to ensure that they properly are rated as targeting children.

3. Enforcement

Among the variables that franchising authorities implementing this proposal will need to consider is means of enforcement. Standards without real enforcement mechanisms are illusory. In this case, the franchising authority should consider who will enforce the standards and what the consequences of noncompliance should be.

Franchising authorities can opt for public or private enforcement. Public enforcement would require the dedication of governmental resources, but would ensure that enforcement occurs. Failure of the franchisee to abide by the strictures of the agreement would be a breach of contract, and the franchising authority would have contractual remedies available to it. In a public enforcement scheme, it would make sense to

89 Martineau, supra note 88.
quantify the damage in the agreement,\textsuperscript{91} rather than face the specter of litigating to ascertain the actual damages for each instance of breach.

Alternatively, the franchising authority could rely on private attorneys general to enforce the standards. In that case, fewer governmental resources would be expended in enforcement, but the risk that standards would go unenforced would be higher.\textsuperscript{92} To alleviate this risk, franchising authorities might consider specifying the damages to which plaintiffs suing noncompliant franchisees would be entitled. Many states authorize their municipalities to structure ordinances in this way.\textsuperscript{93}

\textbf{C. Limitations of This Proposal}

The major problem with this proposal is that technological developments may render it obsolete. Increasing numbers of Americans receive their programming via sources, such as satellite, that are not subject to the cable-franchising framework.\textsuperscript{94} The FCC has ruled that the franchising framework does not apply to some newer, two-way transmission systems, such as broadband Internet and VoIP.\textsuperscript{95} Potential competitors to cable operators, such as telephone companies offering fiber-optic transmission of television programming, may also not be subject to franchising.\textsuperscript{96}

\textsuperscript{91} For example, the dollar figure could be specified for each instance of breach, so long as those damages are not excessive.

\textsuperscript{92} See \textit{1A Norman J. Singer, Sutherland Statutes and Statutory Construction}, \textit{supra} note 88, \S\ 20.19.

\textsuperscript{93} See, \textit{e.g.}, Cal. Const., art. XI, \S\ 7; Fisher v. City of Berkeley, 693 P.2d 261 (Cal. 1984) (municipality authorized to specify damages plaintiff tenant could recover from landlord).


\textsuperscript{96} \textit{FCC Adopts Video Franchise Rules and Overrules States that Allow Rural Phone Companies to Block VoIP}, VoIP \& Gadgets Blog (Mar. 5, 2007), http://blog.tmcnet.com/blog/tom-keating/voip/fcc-adopts-video-franchise-rules-and-
Political obstacles also may impede this proposal. Various states either have considered or are considering reclaiming from municipalities the authority to franchise. 97 Convincing a state to adopt this proposal would likely be more challenging than convincing a municipality. 98

While the efficacy of this proposal as a public health intervention is limited by these trends, measures like this one are still worthy of consideration. For the time being, a large number of Americans will continue to watch cable television whose broadcasts are subject to franchising. Perhaps more importantly, enactment of this proposal could lead to a broader discussion on the propriety of advertising to young children.

III. This Proposal Sets Forth a Practical, Feasible Intervention For the Childhood Obesity Epidemic

A. Overview of the Childhood Obesity Epidemic and Advertising’s Contribution Thereto

1. The childhood obesity epidemic

Obesity rates amongst American children have increased markedly since the early 1980s, 99 when standards for advertisements targeting children were relaxed. 100 Many commentators posit a causal relationship between the trend in obesity rates and the devolution

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98 See Alexander, supra note 97.


of standards for advertising to children. At the very least, the facts support the suppositions that children see many more ads than ever before, that the products marketed in these ads tend to be unhealthy foods, and that these ads are more cogent than ever before.

The incidence of childhood obesity has skyrocketed in recent years. From the early 1970s to the late 1990s, “the prevalence of childhood obesity more than doubled for youth aged 12 to 19 years... and more than tripled for children aged 6 to 11 years[.]” The increase in childhood obesity has been especially pronounced amongst Latino and African American children.

This epidemic has had a disastrous effect on public health. Reputable scientists predict that, for the first time in our nation’s history, the life expectancy of children in school today will be less than that of their parents. The rise in obesity-related ailments, such as type-II diabetes and heart disease, is largely culpable. As Latino and African American children suffer from obesity in higher proportions than do children of other ethnicities, the negative consequences of obesity afflict Latino and African American children in disproportionately


104 Id. at 56.

105 Id. at 58.

106 Id. at 23.

107 Id.
Moreover, children who are obese or overweight are likely to become adults who are obese or overweight, compounding the damage.109

2. Advertisers’ contributions to the childhood obesity epidemic

Two factors explain the increased incidence of childhood obesity: children’s poor diets and lack of physical activity.110 Children today eat more calorie-dense foods.111 In addition, these foods tend to have high glycemic indices, meaning that eating these foods tends to make the consumer feel sated for shorter periods of time.112

One of the major factors contributing to children’s poor diets is advertising.113 Certainly, other factors, including the lower price and widespread availability of calorie-dense food, play substantial roles in skewing children’s diets.114 Nonetheless, advertising’s impact on children’s diets should not be discounted; today’s ads targeting kids are both effective and pervasive, and most market unhealthy foods.

Children are exposed to more advertising than ever before.115 In the 1970s, children saw about 20,000 TV commercials per year; by 1980,
that number had risen to 30,000 per year.116 Today, the average child sees 40,000 television ads per year.117 Most children’s ads hawk unhealthy foods, sugary breakfast cereals, processed snacks, and candy.118 These ads contradict parental efforts to instill healthful eating habits in their children.119 Moreover, these ads reinforce the notion that children should eat their own specific kind of food—typically processed—to the exclusion of “adult,” healthful foods, like vegetables.120

The impact of the unhealthful messages contained in these ads could be mitigated if children’s viewing was properly supervised, but, increasingly, children watch television without adult involvement. The type of intervention proposed here is particularly well suited to this population, the group most in need of an intervention. Because the use of V-Chips to block deceptive advertising would be an opt-out program, and therefore inherently passive in nature, it is the most effective way to reach children who watch television unsupervised.

Advertisements targeting children have never been more adept at convincing young minds. Ads in general have a verifiable impact on consumer behavior.121 Ads to children are especially effective, given that children’s developing minds cannot grasp the persuasive intent of advertising.122 Ads today are more sophisticated than those of the past.123 Marketers employ a variety of complex techniques to improve their advertising, applying lessons learned from sociologists and psychologists studying children’s decision-making processes.124

119 See id. at 258-59; Linn & Novosat, supra note 113, at 136-37.
122 Comm. on Food Marketing & the Diets of Children & Youth, supra note 109, at 135.
123 Id. at 142-43.
124 Advertising conferences use branding experts and marketing analysts to teach
Such practices were not commonplace in the advertising community as recently as twenty years ago.125 The digital age has brought with it the means for advertisers to accumulate reams of data regarding consumer behaviors and reactions,126 as well as the ability to disseminate that advertising to more-targeted segments.127 Enhanced data and the resultant ability to target audiences more accurately have enabled advertisers to improve the persuasiveness of their ads.128 Plus, the number of venues for advertising has increased drastically in the past several years, allowing advertisers to create an environment saturated with advertisements; this saturation increases advertising’s potency.129

B. Interventions Should Aim To Reduce, Through Local Action, The Amount Of Advertising Children Consume

Interventions that seek to reduce the incidence of childhood obesity by affecting the advertising children see generally take three forms. Some interventions endeavor to reduce the time children spend in front of media, either through parental controls130 or via staged...
interventions.\textsuperscript{131} Others attempt to limit the efficacy of food advertising to children.\textsuperscript{132} Still others try to counter unhealthy food advertising with alternative, healthful messaging.\textsuperscript{133}

None of these approaches is optimal. Interventions designed to limit the time children spend exposed to media face problems with

\footnotesize
\begin{itemize}
  \item \textsuperscript{131} The Task Force on Community Preventive Services, a volunteer body of public health professionals appointed by the director of the Centers for Disease Control & Prevention (CDC), performed a systematic review of seven studies conducted on its behalf to measure the effects of reducing young children’s television exposure. Screen time was reduced an average of 0.61 hours per day, yielding a modest improvement in weight-related outcomes. Stanford University conducted a similar staged intervention over six months, where screen time was reduced by about one-third, and a fifty percent reduction in weight gain among participants was reflected. \textit{Obesity Prevention and Control: Behavioral Interventions to Reduce Screen Time}, Cmty. Guide Branch, Ctrs. for Disease Control & Prevention, \url{http://www.thecommunityguide.org/obesity/behavioral.html} (last updated Aug. 24, 2010); Kaiser Family Foundation Statement, \textit{supra} note 130.
  \item \textsuperscript{132} Consumers International has been campaigning since 2004 for an international code on advertising unhealthy food to children. The proposed code was developed by the organization in conjunction with the International Obesity Taskforce. It includes, among other restrictions on advertising, a prohibition on radio and television advertising of unhealthy food between 6 AM and 9 PM. Justin Macmullan, \textit{Protecting the Junk-Food Generation—The Need For International Intervention}, 54 \textit{Diabetes Voice}, Dec. 2009, at 38-39.
  \item \textsuperscript{133} Kaiser Family Foundation Statement, \textit{supra} note 130.
\end{itemize}
scalability, especially those that require parental oversight. Simply put, the children most in need of interventions disproportionately belong to populations that are the most unlikely to implement them. Attempts to dictate or limit the content of food advertising have tended to run afoul of the First Amendment or have had little effect. Finally, the budgetary advantages enjoyed by food advertisers over proponents of healthful counter-messaging targeting children ensure that the former drowns out the latter.

A better intervention would take heed of the shortcomings of the interventions described above. It would recognize the fact that reducing children’s consumption of media sufficiently to affect the obesity epidemic is a long-term goal, not a possible solution to the immediate problem of childhood obesity. It would probably not take the form of a


135 Id. at 4.


139 At conferences like Kid Power!, advertisers meet to “discuss the best ways of reaching not just kids, but the whole family [and] the whole child.” Any government funds devoted to “positive” advertising for kids are no match for the exceedingly deep pockets of the advertising industry, and the infinite resources available to marketers to increase the effects of advertising on kids. See INT’L QUALITY & PRODUCTIVITY CTR., supra note 124.
restriction on content. It would also be inexpensive to implement on a wide scale.

Throughout American history, most effective public health interventions have first been accomplished at the local level. For example, prohibitions on smoking in restaurants and requirements that chain restaurants post the caloric content of their offerings on menu signage, each implemented first in New York City, led to a decrease in the rates of smoking and the calories consumed per meal at chain restaurants, respectively. It is fitting that public health interventions, like the one proposed in this piece, originate at the local level, as states and municipalities, under the American constitutional scheme, retain primary responsibility and authority to regulate for the health and wellbeing of their residents.

The regulation of citizens’ health and welfare has been a cornerstone of state police power since the beginning of U.S. history. The Federalist Papers included the “domestic police” of the states as one of the enumerated powers upon which the federal government would not infringe. The Constitution itself grants power to federal, state,
tribal, and local governments to regulate in the interest of protecting and promoting the public health.\textsuperscript{145} The federal government carries out this task primarily through its ability to tax and spend, and to regulate interstate commerce.\textsuperscript{146} The federal government is also tasked with the responsibility of establishing administrative agencies to oversee an assortment of public health issues.\textsuperscript{147}

Primary responsibility to regulate public health issues, however, remains vested in the states, and in the local governments to which the states delegate their duties. This is achieved largely through the Tenth Amendment, which reserves for the states extensive police powers.\textsuperscript{148} These powers “represent the inherent authority of the state to enact laws and promulgate regulations to protect, preserve, and promote the health, safety, morals, and general welfare of the people.”\textsuperscript{149} The federal government simply is not bestowed with the same “broad authority to act in the interest of the public health.”\textsuperscript{150}


\textsuperscript{146} Id.

\textsuperscript{147} Id.

\textsuperscript{148} U.S. Const. amend. X; see also Amicus Brief of Physicians Hospital of America In Support of Plaintiff’s Motion for Summary Judgment and In Opposition to Defendant’s Motion for Summary Judgment at 5, Virginia v. Sebelius, 702 F. Supp. 2d 598 (E.D. Va. 2010) (No. 10-00188), 2010 WL 3952343, at *8 (citing United States v. Lopez, 514 U.S. 549, 567 (1995) (arguing that a Congressional mandate to purchase health insurance would render the Tenth Amendment a nullity because “[the] Court has rejected any interpretation of the Commerce power which would transform it into a boundless police power”)); Hodge & Gostin, supra note 146, at 22 (citing Letter from Benjamin Mojica, N.Y. Deputy Comm’r of Health, to Donna Knutson, Exec. Dir., Council of State & Territorial Epidemiologists (Aug. 25, 1999) (on file with author); Lawrence O. Gostin, Public Health Law in a New Century Part II: Public Health Powers and Limits, 283 JAMA 2979 (2000)).

\textsuperscript{149} Hodge & Gostin, supra note 145, at 22 (citing Lawrence O. Gostin, Public Health Law in a New Century Part II: Public Health Powers and Limits, 283 JAMA 2979 (2000)).

\textsuperscript{150} Id.; see also Memorandum of the Cato Institute et al. as Amici Curiae Supporting the Plaintiff’s Opposition to Defendant’s Motion to Dismiss at 3, Virginia v. Sebelius, 702 F. Supp. 2d. 598 (E.D. Va. 2010) (No. 10-00188), 2010 WL
Due to their breadth, state police powers justify nearly every type of state regulation designed to protect, promote, or preserve public health, assuming such regulation does not interfere with any constitutionally protected individual rights, or rights reserved for the federal government.\textsuperscript{151} Following the adoption of the Fourteenth Amendment, case law interpreting the amendment further solidified the notion that states enjoy an inherent authority to regulate public health and welfare, even in the context of contracts, such as those made between local franchising boards and cable companies.\textsuperscript{152} Commentators have described the Supreme Court's position in the famous \textit{Slaughter-House Cases} as such: “[r]ights and privileges arising from contracts with a State are subject to regulation for the public health, the public morals, and the public safety.”\textsuperscript{153}

State police powers even extend to regulations that, at first glance, seem to run up against powers reserved for the federal government. Though the federal government is afforded the exclusive right to govern interstate commerce for example, the Supreme Court has long held that state regulation affecting interstate commerce is proper when such laws, though they may have an impact on interstate commerce, have at their core the purpose of promoting, protecting, or preserving public health.\textsuperscript{154} Therefore, state and local regulation of television advertising is appropriate because, although it certainly affects the channels of interstate commerce, the purpose of such regulation is to improve health and combat childhood obesity, not to regulate commerce.

Over time, there has been a shift towards greater federal involvement in the regulation of public health and wellbeing. While federal involvement in public health has significantly expanded in recent years, the scope of state police powers remains substantial. This allows states to address public health concerns in ways that may not be possible at the federal level, especially when it comes to local context and specific community needs.\textsuperscript{2661285, at *10; Brief Amici Curiae of the American Center for Law & Justice et al. in Support of Plaintiff's Opposition to Defendant's Motion to Dismiss at 2-3, Virginia v. Sebelius, 702 F. Supp. 2d 598 (E.D. Va. 2010) (No. 10-00188), 2010 WL 5623081, at *8-9.}

\textsuperscript{151} Hodge & Gostin, \textit{supra} note 145, at 22.
\textsuperscript{152} Parmet, \textit{supra} note 144, at 203.
\textsuperscript{153} \textit{Id.} (citing \textit{Slaughter-House Cases}, 83 U.S. 36 (1872)).
\textsuperscript{154} Hodge & Gostin, \textit{supra} note 145, at 22; see also Fort Gratiot Sanitary Landfill, Inc. v. Mich. Dept of Natural Res., 504 U.S. 353, 366 n.6 (1992) (“For Commerce Clause purposes, we have long recognized the difference between economic protectionism, on the one hand, and health and safety regulation on the other.”).
years, regulation of cable television advertising is most appropriate and most effective at the state level. Despite the growing presence of the federal government in the regulation of public health, states nonetheless retain paramount authority and responsibility to regulate and safeguard public health, making them better equipped to address the pervasive effects of advertising on children. That the federal government has proven in the past to be largely ineffective in its oversight of public health matters only provides further evidence that states are the proper venue for this type of cable advertising regulation.

**IV. Replies To Anticipated Objections**

A state or municipality that embraces this proposal will probably face litigation. Cable providers will likely argue that a demand by a franchising authority that franchisees enable V-Chips in televisions and cable boxes to block advertising targeting young children is (1) an

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156 In 1977, a number of committees petitioned the Federal Trade Commission (FTC) requesting that it institute rulemaking to regulate TV advertising for candy and sugared food products directed to children and to regulate all TV advertising oriented to young children. A responding FTC investigation revealed that there was sufficient evidence to suggest that both (1) television advertising directed to children too young to understand the selling purpose of, or otherwise comprehend or evaluate, commercials and (2) the televised advertising of sugared products to children of all ages may be unfair and deceptive within the meaning of § 5 of the FTC Act. The Commission issued a Notice of Proposed Rulemaking (NPRM) declaring its intent to address the problems posed by TV advertising directed to children. However, before the Commission had reached a decision regarding those issues, Congress enacted the FTC Improvements Act of 1980, which removed the Commission's authority to continue rulemaking in its then-current posture. In response to the Act, the Commission instructed its staff to consider what courses of action may be taken and to draft text of a proposed rule, but the rulemaking process was ultimately terminated due to inconclusive evidence. See Children's Advertising, 46 Fed. Reg. 48,710-02 (Oct. 2, 1981).

157 It bears mentioning that franchisees can waive any possible statutory or constitutional objections as part of a franchise agreement, as long as the waiver is mentioned explicitly. See Erie Telecomms., Inc. v. City of Erie, Pa., 853 F.2d 1084, 1096-97 (3d Cir. 1988).
unconstitutional restriction on speech and (2) preempted by federal law. For the following reasons, these arguments are without merit.

A. First Amendment

This proposed use of V-Chips does not run afoul of the First Amendment. Parents, not the government, are ultimately the parties selecting which television transmissions to censor. Further, to the extent that this use represents government regulation of speech, it is constitutional, as advertising to children (the only form of speech affected by the proposal) is not constitutionally protected.

The federal Constitution only protects speakers from governmental regulation of their speech; individuals remain free to control the speech to which they, personally, are subjected. As stated supra in Part II.A.4, courts have held that the V-Chip is not governmental regulation of speech.158 Rather, it is merely a means by which individuals may control the speech reaching them and their families through the television. Empowering V-Chips to control advertising targeting young children is no more a governmental regulation of speech than is the V-Chip’s existing capability to filter television signals based on ratings associated with the programming.

Even if the use of V-Chips in this way is tantamount to governmental regulation, such regulation is constitutional. First, such a regulation is a proper use of police power. States—not the federal government—retain primary power for protecting the public health and safety of their citizens.159 Efforts to curtail serious health crises like the

158 See Fox Television Stations, Inc. v. FCC, 489 F.3d 444, 466 (2d Cir. 2007), rev’d on other grounds, 556 U.S. 502 (2009).
159 See Jacobson v. Massachusetts, 197 U.S. 11, 24-25 (1905) (“The authority of the state to enact [public health laws] is to be referred to what is commonly called the police power, – a power which the state did not surrender when becoming a member of the Union under the Constitution. . . . [T]his court . . . has distinctly recognized the authority of a state to enact quarantine laws and health laws of every description; indeed, all laws that relate to matters completely within its territory and which do not by their necessary operation affect the people of other states. According to settled principles, the police power of a state must be held to embrace, at least, such reasonable regulations established directly by legislative enactment as will protect the public health and the public safety.”)
childhood obesity epidemic fall within the scope of these powers. As “creatures of the state,” municipalities retain that portion of those powers delegated to them by their states.160 For example, Massachusetts expressly grants its municipalities the ability to license cable operators within their geographical bounds.161 Thus, Boston has primary authority to ensure the health of its residents by making the demand suggested by this proposal.

Second, advertising targeting children enjoys no constitutional protection because of its inherently deceptive nature and because it is not the type of speech protected by the Constitution. Freedom of speech is not absolute.162 Commercial speech, such as advertising, is a category of speech that is entitled to less protection than that afforded political speech.163 Because advertising targeting young children does not meet the criteria for constitutional protection under the test for commercial speech, and because such advertising invariably fails to convey informational content worth protecting, regulation of this advertising should generally pass constitutional muster.

Advertising targeting young children is both inherently unfair and inherently deceptive and thus does not qualify for constitutional protection. Commercial speech is entitled to protection only if, inter alia, it is not “deceptive.”164 Under Federal Trade Commission definitions, an advertisement is “deceptive” if it is “a representation, omission or practice that is likely to mislead [a reasonable member of the advertisement’s target

quotations omitted); see also City of Erie v. Pap’s A.M., 529 U.S. 277, 296 (2000) (“Here, Erie’s efforts to protect public health and safety are clearly within the city’s police powers.”).
States remain free to regulate “some forms of aggressive sales practices that have the potential to exert ‘undue influence’ over consumers[.]” The developing minds of children under the age of seven are unable to perceive the persuasive intent of advertising. Advertising that targets children and exploits this developmental susceptibility, therefore, is deceptive.

Moreover, this advertising is not the sort of speech the commercial speech doctrine was created to protect. For approximately 200 years, in recognition of the understanding that commercial speech had a strong tendency to mislead, it was afforded no constitutional protection and could be regulated freely. This led to anticompetitive practices. To protect the rights of consumers to certain information necessary to making informed buying choices—for example the price, availability,


167 Committee on Communications, American Academy of Pediatrics, Children, Adolescents, and Advertising, 118 Pediatrics 2563, 2563 (2006); Story & French, supra note 87, at 14; Yosifon, supra note 3, at 530.

168 See Ellis M. Ratner et al., FTC Staff Report On Television Advertising To Children 157 (1978) (“[T]he televised advertising of any product to children too young to understand the selling purpose of, or otherwise understand or evaluate, the advertising is inherently both deceptive and unfair within the meaning of [the FTC Act].”).


171 See Bigelow v. Virginia, 421 U.S. 809, 812-13 (1975) (quoting Va. CODE ANN. § 18.1-63 (1960) (banning any communication promoting an abortion or miscarriage)).
and functionality of goods—commercial speech was granted some constitutional protection. The “commercial speech doctrine” arose to protect the interests of consumers in information relevant to their buying decisions. By contrast, advertising targeting young children conveys none of this relevant information to consumers, focusing instead on branding—associating a product with an intangible notion of “coolness.” While information about the price, availability, and functionality of goods or services helps consumers make informed buying decisions, branding has the opposite effect. It introduces into the calculus of decision-making an irrelevant, ethereal quality that undermines the ability of consumers to make informed buying decisions.

172 Peel v. Attorney Registration & Disciplinary Comm’n of Ill., 496 U.S. 91, 108 (1990) (because “disclosure of truthful, relevant information is more likely to make a positive contribution to decisionmaking than is concealment of such information,” the means by which such information is conveyed merits constitutional protection); City of Cincinnati v. Discovery Network, Inc., 507 U.S. 410, 432-33 (1990) (Blackmun, J., concurring) (constitutional protection afforded commercial speech is based on “the First Amendment interests of the listener in the commercial speech context”).

173 Id.; see also 44 Liquormart v. Rhode Island, 517 U.S. 484, 502-03 (1996) (“[B]ans that target truthful, nonmisleading commercial messages rarely protect consumers from [harm caused by misleading or deceptive speech]. . . . [T]hese commercial speech bans . . . hinder consumer choice . . . .”).

174 See Brian L. Wilcox et al., Am. Psychological Ass’n, Report of the APA Task Force on Advertising and Children 23 (2004), available at http://www.apa.org/pi/cyf/advertisingandchildren.pdf (“[A]dvertising to children avoids any appeal to the rational, emphasizing instead that ads are entertainment and ‘enjoyable for their own sake,’ as opposed to providing any real consumer information. The most common persuasive strategy employed in advertising to children is to associate the product with fun and happiness, rather than to provide any factual product-related information.” (citations omitted)).

175 Jason Smith & Wendy Parmet, Free Speech and Public Health: A Population-Based Approach to the First Amendment, 39 Loy. L.A. L. Rev. 363, 399 (2006) (“[M]odern advertising . . . seeks to sell cultural roles, rather than products, by associating a product/brand with a particular cultural attribute. . . . The effect is a ‘force that encourages the individual to maintain a cultural consistency in his/her complement of consumer goods.’”).

176 Id. at 399-400.

B. Preemption

Another argument cable providers would likely make is that federal law preempts state law in this area. Cable providers will argue that Congress has either expressly or impliedly evinced intent to afford the FCC sole authority to regulate advertising on cable television, and that allowing individual states (or municipalities) to negotiate their own restrictions would thwart this congressional intent.

Assuming for the sake of argument that the use of V-Chips is a government-imposed restriction on speech,178 this state restriction is not preempted by federal law because Congress intended municipalities to have the ability to make demands in cable franchise negotiations akin to those articulated in this proposal. Federal law only preempts state law where Congress has manifested intent, expressly or impliedly, to preclude state lawmaking in an area.179 Here, rather than evince intent to foreclose all state regulation of advertising broadcast over cable television, Congress has demonstrated the opposite intent. After the Supreme Court held that federal law empowering the FCC to regulate broadcasting preempted an Oklahoma statute requiring cable providers to remove from their broadcast signals advertising for alcohol products,180 Congress enacted statutes that returned to states and municipalities some control over cable broadcasting.181 These statutes established the present cable-franchising framework, which expressly allows municipalities to require cable providers to remove from their broadcast signals certain content, including the content at issue in this proposal.182

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178 Most likely, this is untrue, rendering a federal preemption argument moot. See supra Part IV.A.
181 See Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460 (codified as amended in various sections of 47 U.S.C.) (establishing a regulatory plan adopted by the FCC that authorized state and local authorities to negotiate cable franchise agreements and to regulate such franchises in areas that were not preempted by the Commission).
182 See supra Part II.A.1.
V. Conclusion

Municipalities authorized by state law to franchise cable providers should exercise this authority to exact concessions from would-be providers that would reduce the childhood obesity epidemic. Specifically, municipalities should require franchisees to empower V-Chips with the ability to block advertising to children. Most advertising to children markets unhealthy foods and beverages, and reducing the amount of advertising children absorb will reduce their demand for and consumption of these unhealthy products.

V-Chips were designed to give parents the ability to block programming harmful to children. When V-Chips were first introduced to American televisions and cable boxes in 2000, their proponents sought to apply the devices’ functionality to obscene and violent programming, the categories of content they considered harmful to children. Since that time, the wealth of evidence that advertising to children is both inherently deceptive and a causal factor in the childhood obesity epidemic has grown exponentially. V-Chip functionality should be extended to encompass an additional category of programming that has proved harmful to children: advertising that targets them. This application of V-Chip functionality is proper under both the Constitution and federal law.

The childhood obesity epidemic threatens to resign a generation to a shorter life expectancy and lower quality of life. Neither the federal nor state governments have demonstrated the ability to tackle this difficult issue, which has multiple contributing factors. Action at either level of government is too easily stymied by those who benefit from the causes of the childhood obesity epidemic. Advocates therefore should consider local action that can address at least some of the epidemic’s causes. This proposal, the author submits, meets that description.
NEW AND EXISTING GM CROPS: IN SEARCH OF EFFECTIVE STEWARDSHIP AND COEXISTENCE

Colin A. Carter¹ and Guillaume P. Gruère²

Abstract

Significant gaps remain in the U.S. regulatory system regarding accidental contamination from both regulated and deregulated genetically modified (GM) crops. First, costly blunders have been associated with confined field trials of regulated GM crops. Second, recent court cases have found that, in some cases during the USDA approval process, the U.S. government failed to account for the economic effects of deregulated GM crops on non-adopters. Procedures for approving and managing GM crops in the U.S. could be improved at a relatively low cost compared to the potential economic damage of further market disruptions.

Key words: GM crops, coexistence, biosafety regulations, GMOs.

I. Introduction

Genetically modified (GM) crops³ are produced using plant biotechnology to select desirable characteristics in plants and transfer genes from one organism to another.⁴ It is an understatement to say that the application of genetic engineering to food and agriculture is one of the most significant technological advances to affect modern agriculture,⁵

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³ Also called genetically engineered (GE) crops, transgenic crops, or biotech crops.
⁵ Robert Herdt, Gary Toenniessen & John O’Toole, Plant Biotechnology for Developing Countries, in 3 Handbook of Agric. Econ. 2641-2667 (Robert Evenson & Prabhu Pingali eds., 2007); Comm. on the Impact of Biotechnology on Farm-Level Econ. and Sustainability, Nat’l Research Council of the Nat’l Acads., The Impact of Genetically Engineered
even though this technology is still confined to relatively few crops.\textsuperscript{6} The future of this technology holds promise of significant continued benefits through application to more and more crops, higher yields due to better control of pests and diseases, salt tolerance, and resistance to frost and drought.\textsuperscript{7} In addition, certain bioengineered crops require fewer chemicals and can therefore be more environmentally friendly.\textsuperscript{8} It is believed that bioengineered foods will eventually offer nutritional and medical benefits to consumers.\textsuperscript{9}

In 2010, fifteen years after their introduction, GM crops have been widely adopted internationally, with a total area reaching an estimated 148 million hectares in twenty-nine countries.\textsuperscript{10} Over 75 percent of the global soybean acreage is now planted with biotech varieties and close to 50 percent of the world’s cotton is biotech.\textsuperscript{11} But due to differences in national regulations, variations in consumer acceptance, and food processor and retailer concerns, adoption of biotech crops has been essentially limited to four non-food GM commodities (corn, soybeans,
cotton and canola)\textsuperscript{12} leaving aside major food crops (including rice, wheat, or fruits and vegetables).\textsuperscript{13}

These four crops (corn, soybeans, cotton and canola) are widely traded and consumed in a large number of countries. While most production and trade of these crops is composed of an undifferentiated mix of GM and non-GM primary products, a small but persistent share of the production of these crops has been devoted to pure (or segregated) non-GM or organic products,\textsuperscript{14} reaching market niches especially in Europe and Eastern Asia.\textsuperscript{15}

For instance, Japanese consumers eat a considerable amount of food containing genetically modified organisms (GMOs) (such as canola oil) but they also demand a certain amount of non-GM commodities such as non-GM corn for snack foods.\textsuperscript{16} Japan imports non-GM corn each year from the U.S. and China.\textsuperscript{17} This corn is used in food products

\begin{footnotes}
\item[12] Authors’ calculation based on James, supra note 6, at 7 (noting that more than ninety-nine percent of the global area sown to GM crops is devoted to these four crops- 50% soybeans or 73.3 mha, 31% corn or 46.8 mha, 14% for cotton or 21.0 mha and 5% for canola or 7.0 mha).
\item[17] Colin A. Carter & Guillaume P. Gruère, International Approval and Labeling
\end{footnotes}
that are subject to GM labeling. On the other hand, most of Japan's imported corn is GM, which is used for animal feed and the final meat product does not have to be labeled.

Additionally, although there are no separate trade data on non-GM crops, up to 20 percent of Japan's annual soybean imports (around 3.5 million metric tons of total imports) may be non-GM. The non-GM soybeans are mainly used for tofu, which, unlike soybean oil, is subject to Japan's GM labeling regulations, and is preferred by GM-averse consumers. If their product falls under GM labeling requirements, processors who want to avoid labeling must purchase non-GM commodities.

Interestingly, because of regional agricultural specialization, significant shares of the pure non-GM crops are produced in countries that have adopted GM crops, as shown in Table 1. These countries represent five different continents, and have been able to manage the coexistence of GM and non-GM crop production and to generally maintain market access in countries they export to, regardless of the importing nations' GM/non-GM preference. For instance, India has the largest production areas of both GM cotton and organic cotton.

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18 Carter & Gruère, supra note 17, at 472-74.
19 Id. at 474.
20 Id.
21 Id. at 473.
22 Id.
23 Id. at 472-73.
Brazil produces a large share of the world’s GM and non-GM soybeans,\textsuperscript{26} and South Africa,\textsuperscript{27} Spain and the United States have all continued to produce pure non-GM corn despite their wide adoption of GM corn.\textsuperscript{28} This demonstrates that both coexistence and segregation are economically feasible, despite contradicting reports published by certain non-governmental organizations.\textsuperscript{29}
Table 1. Successful coexistence schemes: example of countries that produce and market GM and non-GM crops

<table>
<thead>
<tr>
<th>Producing Country</th>
<th>Corn</th>
<th>Soybeans</th>
<th>Cotton</th>
<th>Canola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td></td>
<td></td>
<td>GM &amp; organic</td>
<td>GM &amp; non-GM</td>
</tr>
<tr>
<td>Brazil</td>
<td>GM</td>
<td>GM &amp; non-GM</td>
<td>GM &amp; organic</td>
<td></td>
</tr>
<tr>
<td>Burkina-Faso</td>
<td></td>
<td></td>
<td>GM, fair trade &amp; organic</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>GM, non-GM &amp; organic</td>
<td>GM, non-GM &amp; organic</td>
<td>GM, non-GM &amp; organic</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td>GM &amp; organic</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
<td></td>
<td>GM &amp; organic</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td></td>
<td></td>
<td>GM &amp; organic</td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>GM &amp; non-GM</td>
<td>GM</td>
<td>GM &amp; organic</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>GM, non-GM, &amp; organic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USProA</td>
<td>GM, non-GM &amp; organic</td>
<td>GM, non-GM &amp; organic</td>
<td>GM &amp; organic</td>
<td>GM, non-GM &amp; organic</td>
</tr>
</tbody>
</table>

However, coexistence is not always successful; there have been a number of occurrences where GM crops have been introduced into the non-GM production and or marketing chain either illegally/unofficially or unintentionally, as shown in Table 2. In countries where GM crops have been legally introduced, any GM event (unique crop/trait combination) must pass a biosafety regulatory process before being released.31 Many GM events have gone through the process successfully (top-right cell of Table 2).32 Yet, some GM events have been introduced illegally by


31 Carter & Gruère, supra note 17, at 460-63.

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entrepreneurs or farmers importing seeds for their own use (top-left cell of Table 2),\textsuperscript{33} such as soybeans in Argentina.\textsuperscript{34} Other GM events have been unintentionally (i.e., accidentally) introduced before their approval, mostly around the stage of field-testing during the approval process (bottom-left cell of Table 2), such as LL601 rice in the United States.\textsuperscript{35} Lastly, some approved GM events have been found in non-GM fields or supply chains (bottom right cell of Table 2).\textsuperscript{36} These two latter categories represent cases of accidental contamination.\textsuperscript{37, 38}

crop\_database (last visited Oct. 12, 2011) (searchable database of GM crops by event name, crop type, approval type, and country).


\textsuperscript{34} See Terri Raney, Economic Impact of Transgenic Crops in Developing Countries, 17 Current Op. in Biotechnology 174, 175 (2006).


\textsuperscript{37} In this article, we define “contamination” as the unwanted introduction of GM material in the non-GM supply with negative market consequences. The food, feed and environmental safety issues associated with GM crops are not being questioned here.

\textsuperscript{38} Most of these cases of contamination (and especially those in the first column of Table 2) were most likely due to human errors, not due to pollen flow or natural gene flow. However, it is not always easy to detect the cause of the contamination. For instance, after an extensive investigation of the LL601 rice contamination, the U.S. Department of Agriculture concluded that they did not know how the experimental rice entered the certified seed supply, but they ruled out direct cross-pollination. Animal & Plant Health Inspection Serv., U.S. Dep’t of Agric., Report of LibertyLink Rice Incidents 1 (2007) [hereinafter Report of LibertyLink Rice Incidents], available at http://www.aphis.usda.gov/newsroom/content/2007/10/content/printable/RiceReport10-2007.pdf.
Table 2. International episodes—unlawful unintended commingling of GM events: a typology

<table>
<thead>
<tr>
<th>Type of Introduction</th>
<th>Unapproved GM event</th>
<th>Approved GM event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intentional</td>
<td>GM Soybeans in Argentina,* Brazil,* Bolivia, &amp; Romania;† GM Cotton in Brazil,* India,* Pakistan,* Thailand, &amp; Vietnam; GM Rice in China; GM Corn in Mexico &amp; Peru.</td>
<td>All legally commercialized GM crops including the four main crops (canola, corn, cotton and soybeans) in twenty nine countries.</td>
</tr>
<tr>
<td>Unintentional</td>
<td>GM Corn in the U.S.*,†§ and Chile; GM Rice in the U.S.; GM Papayas in Thailand; GM Potatoes in Sweden; GM Corn in Chile.</td>
<td>GM canola in wild species (Canada/USA); GM Flaxseed in Canada;** GM corn/canola in non-GM or organic fields in the U.S., Canada, and Australia; GM corn in organic corn in Spain.</td>
</tr>
</tbody>
</table>

Notes:  * GM event approved after commingling, at least in the producing country; † GM event approval reversed upon joining the EU; ‡ GM event with split approval: for use in the feed supply but not the food supply; § GM corn for pharmaceutical purposes under trial; ** GM flaxseed approved and then voluntarily withdrawn and still found in supply chain.

In the United States, where GM crops were first planted on a large scale, coexistence has both succeeded (Table 1) and failed (Table 2). Despite the successful wide commercialization of GM crops and a history of safe consumption, significant gaps remain in the U.S. regulatory system regarding accidental contamination from both regulated and deregulated GM crops. While the safety of GM crops has been the primary focus of regulatory efforts, the proper handling of confined field trials of regulated crops is being increasingly questioned, after several recent costly


40 GM tobacco was planted for a few years in China in the early 1990s before the United States. Robert Paarlberg, Starved for Science: How Biotechnology is Being Kept Out of Africa 136 (2008).

41 See generally Nat’l Research Council, supra note 5.

42 Lemaux, supra note 4, at 542.


failures (see bottom left cell of Table 2). Furthermore, no visible effort has been undertaken by the U.S. government to comprehensively address the growing issue of GM/non-GM coexistence for deregulated crops.\(^{46}\) While GM and non-GM crops (e.g., corn, soybeans, and cotton) are produced and marketed in the U.S. in parallel,\(^{47}\) regulatory questions are being raised with regard to newer GM crops such as alfalfa. Recent court cases have highlighted the U.S. Department of Agriculture’s (USDA)\(^{48}\) failure to account for the economic effects of GM crops on non-adopters when approving new GM crops.\(^{49}\)

In 2007, the U.S. District Court for the Northern District of California issued a permanent injunction, halting the production of GM alfalfa pending the USDA’s completion of an Environmental Impact Study (EIS), including an assessment of the economic effects on non-adopters such as organic producers.\(^{50}\) The 9th Circuit affirmed the permanent

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48 See Emily Waltz, Industry Exhales as USDA Okays Glyphosate-Resistant Alfalfa, 29 Nature Biotechnology 179, 180-81 (2011) (summarizing these court cases).

49 The U.S. regulatory framework for biotechnology includes three agencies: the first, the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (“USDA APHIS”), is in charge of ensuring the safe trials and release of GM field crops (except pesticide expressing crops); the second, the Environmental Protection Agency (“EPA”), is in charge of evaluating and approving pesticide related crops (Bt crops); and the third, the Food and Drug Administration (“FDA”), is in charge of food safety (via a voluntary consultation for substantially equivalent products). For more on the U.S. regulations, see generally Endres, supra note 43; Perrin, supra note 45 (for crops); Carter & Gruère, supra note 17, at 466-468 (for food).

injunction. In 2010, the U.S. Supreme Court reversed and remanded the case, holding that the District Court abused its discretion in issuing the permanent injunction, which erroneously prevented the USDA from partially deregulating GM alfalfa before completing an EIS. Once an EIS was completed in 2011, the USDA granted unconditional approval of GM alfalfa, approving it without any restrictions such as buffer zones. The USDA said it only had authority to establish conditions for planting GM alfalfa if there are safety risks. In other words, the agency said that it had little authority to consider whether or not a GM crop poses economic harm to an organic crop, for example, because of co-existence risks.

The objective of this paper is to provide an analysis of the growing challenges of coexistence and unintended commingling in the United States, at a time when an increasing number of GM events are expected to reach the market in the coming years. Recently, the USDA has taken steps to improve the management of field trials and has discussed possible measures to ensure the coexistence of GM and non-GM foods in the market chain, but it has not implemented any regulatory procedures leading to progress in this area. We argue that coexistence is an issue of critical importance for U.S. agriculture, with significant international trade implications. Increased efforts by public authorities in the U.S. and abroad are needed to avoid future market and trade disruptions, to internalize production externalities, and, at the same time, to provide choice for consumers and producers.

51 Geertson Seed Farms v. Johanns, 570 F.3d 1130, 1141 (9th Cir. 2008).
52 Monsanto Co. v. Geertson Seed Farms, 130 S.Ct. 2743, 2761 (2010).
54 Endres, supra note 43, at 139.
56 Genetically Engineered Crops, supra note 39, at 5.
Many papers have been written on GM/non-GM coexistence strategies, mostly in the context of the European Union. In North America, a number of studies have been published on the cost of market segregation for non-GM crops, most focusing on soybeans and wheat. But the critical policy issues related to managing market risks in a large GM producing and exporting nation have not been treated in a systematic manner.

This paper is organized into three sections. Section 2 reviews the economic effects of some of the major unintended commingling incidents. Section 3 reviews some of the findings from recent court cases on coexistence and the USDA’s response to these cases. The last section concludes the paper and suggests key policy recommendations.

II. RECENT UNINTENDED COMMINGLING INCIDENTS

Many cases of unintended GM commingling have been reported worldwide, including in the United States. By far, the most serious


60 Greene & Smith, supra note 46. Greene and Smith provide a review of the issue related to coexistence in the U.S., but with a specific focus on organic versus GM crops.

61 See Ledford, supra note 35; see also GeneWatch U.K. & Greenpeace Int’l, supra note 39, which reports 241 contamination as of August 15, 2011. A recent instance is the case of Triffid flaxseed, which was developed by the University of Saskatchewan (Canada) and approved in 1998, but deregistered in 2001 without having being commercialized, but found in several shipments
incidents were the corruption of the U.S. corn supply by StarLink corn in 2000 followed by the “contamination” of the U.S. long grain rice market by Liberty Link (LL) rice in 2006. In both of these cases, weak government oversight and poor stewardship by crop science companies caused enormous losses for U.S. farmers. Below we briefly describe the main characteristics and market effects of the StarLink corn and LLRice commingling events.

**StarLink Corn**


63 Since the term “contamination” may imply the adverse health or environmental effects of its synonym “pollution,” and use of the word in legal, scientific, or economic literature can lead courts and insurers to interpret third party liability insurance as not covering unintended commingling of biotech crops, the authors use “contamination” only in reference to LLRice, where the court is using this term. See Court Papers, In Re: Genetically Modified Rice Litigation, [http://www.bayerricelitigation.com/](http://www.bayerricelitigation.com/) (follow Court Papers hyperlink) (last visited Apr. 9, 2012).


66 For a complete review of the StarLink commingling case study, see generally U.S. ENVTL. PROT. AGENCY, *CONCERNING DIETARY EXPOSURE TO CRY9C PROTEIN PRODUCED BY STARLINK CORN AND POTENTIAL RISKS ASSOCIATED WITH SUCH EXPOSURE* (Mar. 28, 2008) [hereinafter EPA WHITE PAPER] (White
production for animal feed but not for human consumption. StarLink was not approved for human consumption because it contained Cry9C, a protein that might cause allergic reactions in some humans. This approval represented a unique split license approach to deregulation – all other GM crops had been approved for use in food and feed together.

On September 18, 2000, the Washington Post reported that StarLink material was found in Kraft Food’s taco shells. Kraft Foods soon announced a voluntary withdrawal of all taco shell products from grocery stores. This led to recalls of hundreds of food products domestically. Soon after, on October 26, 2000, StarLink corn was reportedly discovered in snack foods and animal feed in Japan. Similar discoveries were reported in South Korea and Canada, where StarLink corn was discovered in both food and animal feed.

The StarLink commingling episode was a major event in the agricultural markets, especially in East Asia, a large corn importer. That market shifted its demand for corn imports away from the U.S. and towards other countries (such as China) due to concerns that food products made from U.S. supplies could be contaminated with StarLink.

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67 EPA White Paper, supra note 66, at 1.
69 Taylor & Tick, supra note 62, at 15.
70 Id.
71 Id. at 17-18.
72 Id. at 19.
But given the dominance of the U.S. in the international corn market, major importers like Japan had few alternatives apart from continuing to import from the U.S. while working out an arrangement for a new testing protocol for detecting StarLink GMOs and dealing with low levels of unintended commingling.

In fact, by December 2000, a few months after Starlink was discovered in the food supply, the U.S. Department of Agriculture (USDA) quickly developed a new testing procedure to assure Japan that any further corn imported from the United States would not contain detectable StarLink material. According to the Wall Street Journal, the December 2000 U.S.-Japan agreement lifted corn prices. In the commodities column, the Wall Street Journal reported that March corn futures at the Chicago Board of Trade rose five cents to $2.2325 a bushel on news that US and Japan had reached an agreement on export inspections for genetically modified StarLink corn.

There were four main reasons why the StarLink commingling episode was not as costly to U.S. farmers as it could have been. First, corn imports into Japan were primarily for feeding animals. Second, at the time there was no mandatory requirement in Japan that animal feed be free of unapproved GMOs. Third, Japan had no alternative source for

handle/2142/2385/1001corn.pdf?sequence=2.


78 Japan’s domestic corn production is virtually zero and, on average from 1998-2000, 74% of Japan’s corn consumption was used for feed purposes. See PSD Online Home - Custom Query, Food & Agric. Serv., U.S. Dep’t Agric, http://www.fas.usda.gov/psdonline/psdQuery.aspx (select Corn, Imports or Domestic Consumption, and Japan) (last visited Apr. 9, 2012).

79 Before April 2003, Japan only had a voluntary procedure to approve imports of GM events for animal feed. See TETSUO HAMAMOTO, FOREIGN AGRIC. SERV., U.S. Dep’t Agric., GAIN REPORT No. JA3002, JAPAN BIOTECHNOLOGY UPDATE ON JAPAN’S BIOTECHNOLOGY SAFETY APPROVAL AND LABELING POLICIES
all of its corn import needs outside of the United States. Fourth, the Japanese government has a very practical approach to GMO labeling, as a way to minimize scandals and keep the price premium for non-GMOs at a reasonable level. Since April 2001, the Japanese government has required mandatory labeling when GM material is present in the top three raw ingredients and accounts for 5% or more of the total weight. It also allows the presence of non-GM labels at the same tolerance level, if produced with identity preservation. Exemptions to Japan’s labeling requirements include feedstuffs, alcoholic beverages, and processed foods such as soya sauce, corn flakes, and other vegetable oils.

What was important in the StarLink case is that, as part of a new regulation requiring safety assessment for GM animal feed implemented on April 1, 2003, the Japanese government set a 1% tolerance for the unintentional commingling of GMOs in feed approved in other countries but not yet approved in Japan.

Even though a relatively small share of U.S. corn acreage was planted with StarLink, it contaminated the U.S. corn crop and the world corn market. Acreage planted with StarLink peaked at 350,000 acres in 2000, less than 1 percent of total U.S. corn acreage at the time. But the market impact was large because the U.S. is the world’s largest producer

81 Colin A. Carter & Guillaume P. Gruère, INTERNATIONAL APPROVAL AND LABELING POLICIES OF GENETICALLY MODIFIED FOOD IN MAJOR TRADING COUNTRIES, IN REGULATING AGRICULTURAL BIOTECHNOLOGY: ECONOMICS AND POLICY 459, 472 (Richard E. Just et al. eds., 2006).
82 Id. South Korea’s regulations are similar to Japan’s except that the tolerance level is 3% of the top 5 ingredients. Guillaume Gruère & S.R. Rao, A REVIEW OF INTERNATIONAL LABELING POLICIES OF GENETICALLY MODIFIED FOOD TO EVALUATE INDIA’S PROPOSED RULE, 10 AGBIOFORUM 51, 53 tbl.2 (2007).
83 Carter & Gruère, supra note 81, at 472.
84 Id.
85 Hamamoto, supra note 79, at 8-9.
86 Carter & Smith, supra note 73, at 523.
87 Id.
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and exporter of corn, accounting for about 40 percent of global output and 65 percent of world corn exports at the time of the commingling episode. There are numerous importers of U.S. corn, and in 2000 the major markets were Japan, Taiwan, Mexico, Egypt, South Korea, and Colombia. At the time of the commingling episode, StarLink was not approved for any use in Japan, the largest single foreign customer of U.S. corn.

The StarLink commingling episode was disruptive because a relatively large share of the market had zero tolerance for its use, and zero tolerance is virtually impossible to attain in the U.S. commodity trade system. StarLink zero tolerance applied to food use of corn in the U.S., Japan and South Korea. Once co-mingling of StarLink was discovered, about 25% of the market for U.S. corn required assurance that they were purchasing non-StarLink corn. Lin, Price, and Allen analyzed the negative impact on U.S. corn exports due to the StarLink issue. They identified an 11% decline in U.S. exports to Japan through March 2001, narrowed to 7% by mid-April 2001 and ultimately to 6% for the marketing year. Other evaluations of the reduced demand reached similar conclusions.

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88 Id. at 522-23.
92 Lin et al., supra note 66, at 31, 34.
93 See Carter & Smith, supra note 73, at 525.
94 Lin et al., supra note 66, at 33.
95 See, e.g., Fukuda, supra note 90, at 16; Peter McAuliffe, Is StarLink Corn a
The StarLink “split license” was flawed regulation from the beginning and was discontinued by the EPA. The U.S. grain handling system was clearly not prepared to handle split licensing and, as a result, StarLink easily became co-mingled with non-StarLink corn and found its way into U.S. and foreign food products and bulk export cargoes. Less than 1% of the total U.S. corn acreage was planted to StarLink, yet 67% of the inbound corn samples tested by Japan (the most important foreign market) between September and December 2000 tested positive for StarLink. Aventis provided compensation for StarLink growers, but not for other corn growers who suffered from the price shock due to trade disruption. Carter and Smith found the StarLink commingling episode resulted in a 6.8% drop in the price of corn that lasted for at least 6 months; translating into a loss of roughly $500 million to the non-StarLink U.S. corn growers. However, in a class action settlement, counsel representing U.S. corn farmers who grew non-Starlink corn between 1998 and 2002 settled for $110 million.

Table 3 reports results from the Japanese testing of inbound U.S. corn for feed and the level of commingling was 67% of the lots tested from April to September 2000. The measurable level of commingling declined to 47% from October 2000 to March 2001, and then to 15% from April to September 2001. In December 2002, more than two

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98 Carter & Smith, supra note 73, at 523.


100 Carter & Smith, supra note 73, at 533.

101 See generally Thomas P. Redick, Engineering Legal Risk Management Into Agriculture Biotechnology, Legal Backgrounder, Jan. 16, 2004 (discussing the “Public Nuisance” decision and its implications for the industry).

102 Hamamoto, supra note 79, at 8.

103 Id.
years after the presence of StarLink was withdrawn from the market, a cargo of food corn shipped to Japan tested positive for StarLink.\textsuperscript{104} The Japanese Ministry of Health, Labor and Welfare (in charge of food safety regulations) continued testing inbound cargoes for StarLink until early 2008.\textsuperscript{105} The USDA stopped testing for StarLink in corn exports on August 15, 2010, five years after it last detected traces in shipments.\textsuperscript{106}

\begin{table}[h]
\centering
\caption{Monitoring for the presence of StarLink in Japan's feed corn imports\textsuperscript{107}}
\begin{tabular}{|l|c|c|}
\hline
Time Period & Positive Ratio & Commingling Concentration \\
\hline
April to Sept. 2000 & 20/30 (66.7\%) & 0.51\% \\
Oct. 2000 to Mar. 2001 & 34/72 (47.2\%) & 0.17\% \\
April to Sept. 2001 & 8/53 (15.0\%) & 0.05\% \\
Oct. 2001 to Mar. 2002 & 5/45 (11.1\%) & 0.09\% \\
April to Sept. 2002 & 4/42 (9.5\%) & 0.10\% \\
\hline
\end{tabular}
\end{table}


Despite the fallout from the StarLink commingling episode, and changes in EPA procedures, the 2011 deregulation by USDA of a biofuel corn developed by Syngenta (Event 3272), made some observers suggest the possibility of similar accidental commingling episodes in years to come.\textsuperscript{108} This GM corn is designed to improve the conversion to ethanol,


\textsuperscript{107} Hamamoto, supra note 79, at 8.

\textsuperscript{108} World’s First Genetically Engineered Biofuels Corn Threatens Contamination of Food-Grade Corn, The Ctr. for Food Safety (Feb. 11, 2011), http://www.centerforfoodsafety.org/2011/02/11/worlds-first-genetically-engineered-biofuels-corn-threatens-contamination-of-food-grade-corn; Emily Waltz,
but is not intended for feed or food use (mainly because it would affect the starch milling industry). The main difference is that, in this case, the corn industry did push the biotech company to obtain import clearance in some of its major markets (Australia, Canada, Mexico, the Philippines, and Russia). But at the time of commercial release, China, Japan and the European Union still had to approve it. Even with no proven health risks, introducing a non-food GM crop into the largely mixed corn commodity chain could create domestic challenges to the starch industry and possible trade disruptions, especially knowing that post-approval management rules and oversight have not changed since the StarLink case.

**Liberty Link Rice**

The United States is a significant participant in the overall world rice market, ranking among the top five rice-exporting nations in the world

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111 Syngenta will apply to approve it in China, but China’s procedure can only start after a GM event has been approved in the US, which forces asynchronicity of approval. E-mail from Prof. Jikun Huang, Dir., Chinese Ctr. for Agric. Policy, Chinese Acad. of Scis., to author (July 20, 2011) (on file with author).

112 The National Corn Growers Association had significant discussions with Syngenta pre-approval, and it was decided that the risk could be minimized by obtaining approval in import countries and the guarantee that it would be marketed close to ethanol factories. Syngenta’s record of stewardship was considered better than competing companies, despite the Bt 10 Corn story. Interview with Martin Barbre, Co-Chair, Commodity Classic Comm., Nat’l Corn Growers Assoc., in D.C. (March 14, 2011).

along with Thailand, India, Pakistan, and Vietnam. Consequently, foreign markets are an important driver of prices received by U.S. rice farmers. In the U.S., rice is grown in the west and the south. Production is concentrated in California in the west and in five southern states with Arkansas serving as the largest producer in the south. In the southern region, the predominant varieties are long-grain, whereas California produces primarily medium-grain varieties. This section describes the economic effects of a large scale contamination of the southern U.S. rice crop by unapproved Liberty Link rice, a GMO, which was officially detected in the rice supply in 2006.

GM Liberty Link long-grain rice—including LLRICE 601 and LLRICE 604—was developed by Aventis to address weed control problems. These varieties were developed to be herbicide tolerant, resistant to glufosinate, the active ingredient in Bayer’s Liberty herbicide. As part of the approval process, Liberty Link rice field trials were conducted by Louisiana State University in collaboration with Bayer CropScience from 1999 through 2001. Field tests for LLRice 601 were conducted by Aventis (acquired by Bayer in 2001) in several U.S. states or regions, including Puerto Rico, Arkansas, Louisiana, Mississippi, and Texas, but the rice varieties did not go through the complete USDA deregulations.

Five years after these field trials, in August 2006, these unapproved varieties were detected in a cargo of rice shipped to the EU, one of

116 Id.
120 Master Consolidated Class Action Complaint, supra note 118, at 15.
the most important U.S. markets for long-grain rice. This immediately affected the predominant type of rice grown in the southern states of Arkansas, Louisiana, Missouri, Texas, and Mississippi. The USDA announced that unapproved GM rice (Liberty Link LL601) was found in shipments of U.S. long-grain rice, and the carrier variety was soon found to be a very popular variety named Cheniere.\textsuperscript{122}

Immediately after, the Chicago rice futures price dropped sharply, plunging 10\% in just a few days (Figure 1). Farmers were just beginning the rice harvest and suffered this significant loss in the value of their crop before they had a chance to market it. While the visible price drop happened in the first week following the announcement (Figure 1), there is evidence that such price shocks can be persistent and have much longer effect (lasting several years) on the overall price average, even after the situation has resolved itself.\textsuperscript{123}

\textbf{Figure 1. Price effect of the LL 601 “contamination” announcement:\textsuperscript{124} Chicago Rice Future November 2006 ($/cw)
In March 2007, there was a further setback to the rice industry when the USDA announced that an additional popular variety of long-grain rice, Clearfield CL131, was found to contain another Liberty Link variety, Bayer’s unapproved LL604 rice. In total, Cheniere and CL131 represented about 30% of the Southern long-grain rice acreage in 2006. These varieties could not be planted in 2007 to avoid rice contamination, which could have caused additional financial losses for rice farmers, not to mention problems with seed availability for non-contaminated varieties.

In response to the USDA announcement that LLRice had contaminated shipments, the EU swiftly imposed measures to minimize the amount of contaminated rice entering the EU food supply. U.S. farmers export approximately 50% of their long-grain rice, so foreign tolerance levels for adventitious presence of GM material are very important. The EU was a significant importer of U.S. rice but this trade came to a virtual halt following the Liberty Link contamination, and it has not fully recovered (see Figure 2). The EU has zero tolerance for adventitious presence of unapproved GM events like LL601 and as of 2011 Bayer had not applied for import authorization of LL601 in the EU.

125 Report of LibertyLink Rice Incidents, supra note 38, at 5.
130 Perhaps because of the revert it received to a previous GM rice. No rice has been approved in the EU as of March 2011. See GM Food & Feed – INTRODUCTION, http://ec.europa.eu/food/dyna/gm_register/index_en.cfm.
The EU “emergency measures” on LLRice remained in place for almost 4 years. Upon lifting the emergency measures on April 19, 2010, the Member States of the European Commission voted to: “repeal[ ] Decision 2006/601/EC on emergency measures regarding the non-authorised genetically modified organism ‘LL RICE 601’ in rice products, and provide[ ] for random testing for the absence of that organism in rice products.” This decision took effect in June 2010 and required the testing at origin of U.S. long grain rice for the presence of the LL601 trait. After the emergency measures were lifted, the U.S. rice industry began the difficult process of seeking to regain the important EU market, but significant hurdles remained. It is noteworthy that once the emergency measures were removed, “random testing” for LL601 remained in the EU.
and there is no doubt that additional testing in the future (independent of the mandatory random testing) will continue on a commercial basis.\textsuperscript{136}

Apart from individual testing by commercial buyers, member states may also continue their own testing.\textsuperscript{137} This means that there are three potential testing roadblocks to the exportation of U.S. rice to the EU: random testing as per the EC directive, commercial testing as per customer demands, and member state testing in response to consumer demand & the EU’s zero tolerance directive.

While the April 19, 2010 vote served to remove legally binding emergency measures, it did not eliminate the commercial stigma associated with the LLRice “contamination” of the U.S. rice supply. In the almost five years that U.S. rice was prohibited from import to the EU, other countries, such as Thailand and Uruguay, essentially took over the market and established commercial relationships.\textsuperscript{138} It will take significant time for the U.S. industry to regain those relationships and build up exports to anywhere near the level they were before the contamination. There remains concern in the EU over unapproved LLRice turning up in food products.\textsuperscript{139} This loss of export has not been compensated by additional exports to other destinations (Figure 3). Overall, more than 80% of the U.S. exports to the EU have been lost since the beginning of the 2006-07 marketing year.\textsuperscript{140} Removal of the emergency measures was a necessary, but

\begin{itemize}
  \item 136 Id.
  \item 137 Id.
  \item 140 Carter Direct Examination, \textit{supra} note 126, at 82.
\end{itemize}
insufficient, condition to regain what the U.S. rice industry lost due to the contamination.

As of early 2011, the total judgments and settlement imposed on Bayer in a few cases amounted to an estimate $250 million.\textsuperscript{141} Four hundred and fifty separate lawsuits were launched against the company.\textsuperscript{142} On July 1, 2011, Bayer finally agreed to pay $750 million in compensation to rice farmers in Arkansas, Louisiana, Mississippi, Missouri and Texas to settle these lawsuits.\textsuperscript{143}

\textbf{Figure 3. U.S. long-grain rice exports to countries other than the EU (million hundred weight) Aug-July (rough equivalent)}\textsuperscript{144}

\begin{center}
\begin{figure}
\centering
\includegraphics[width=\textwidth]{riceexports.png}
\caption{U.S. long-grain rice exports to countries other than the EU (million hundred weight) Aug-July (rough equivalent)}
\end{figure}
\end{center}

\begin{enumerate}
\item\textsuperscript{142} \textit{Id.}
\item\textsuperscript{144} See \textit{U.S. Rice Industry: Background Statistics and Information}, U.S. Dept. of
Table 4 provides an overview comparison of the StarLink corn and Liberty Link rice contamination events. Both events were caused by European cropscience companies on U.S. soil,\(^\text{145}\) which is somewhat ironic considering the EU’s zero tolerance policy for GM material discussed below. The LLRice contamination was worse than the StarLink corn case because the unapproved rice was in the foundation seed and at least 30% of the southern U.S. rice acres were contaminated.\(^\text{146}\) The authors estimate that LLRice contamination cost U.S. farmers at least $1.2 billion, which does not include the $80 to $180 million of estimated economic damages to the European rice industry, in 2008.\(^\text{147}\) Damages in the LLRice case are very high because the U.S. farmers lost one of their most important markets. Now, 5 years after the contamination, the EU is still not a significant buyer of U.S. long grain rice.\(^\text{148}\)
Table 4. Comparison of StarLink Corn and LibertyLink Rice commingling episodes 149

<table>
<thead>
<tr>
<th>Crop and Year of Announcement</th>
<th>StarLink Corn 2000</th>
<th>LibertyLink Rice 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Acres Infected</td>
<td>1%</td>
<td>30%</td>
</tr>
<tr>
<td>% Crop Affected</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Years to Identify Infection</td>
<td>1 year</td>
<td>5 years</td>
</tr>
<tr>
<td>Major Market Impacted</td>
<td>Japan</td>
<td>European Union</td>
</tr>
<tr>
<td>Settlement</td>
<td>$110 million</td>
<td>$750 million</td>
</tr>
<tr>
<td>Years with Positive Test Results</td>
<td>2+ years</td>
<td>5+ years</td>
</tr>
</tbody>
</table>

Even though the southern U.S. rice crop acreage is much smaller than the U.S. corn crop (2.3 million acres in 2006 for rice versus 79.5 million acres in 2000 for corn), the settlement on the rice case, announced in 2006, exceeded to the one affecting the corn crop announced in 2000. 150 There are at least five reasons as to why the rice damages incurred by U.S. farmers were higher compared to the StarLink corn case. First, the LLRice contamination affected a much larger share of the rice crop compared to the StarLink corn incident. Second, rice is primarily a food crop, whereas corn is primarily a feed grain. Third, the rice contamination affected US long grain rice exports to the EU market, which is less tolerant of GMO contamination compared to the feed market in Japan. 151


151 Carter & Gruère, supra note 17, at 468-73.
major market affected by StarLink. Fourth, the EU was able to turn to alternative export supplies of long-grain rice (e.g., Uruguay and Thailand) to replace the U.S. as a source, and that was not an option for Japan in the case of corn.\textsuperscript{152} U.S. corn sales to Japan were only temporarily disrupted by StarLink, unlike the Liberty Link rice situation which interrupted U.S. rice sales to the EU for many years. Finally, the LLRice contamination was especially problematic because it found its way into the rice foundation seed supply.\textsuperscript{153}

Unfortunately the USDA could not explain how this happened even after conducting an expensive investigation.\textsuperscript{154} The contaminated seed supply meant that the LLRice contamination was very widespread—all U.S. long-grain rice farmers were impacted, as samples from the five Southern states in the growing region tested positive for unapproved LLRice.\textsuperscript{155} But just like StarLink, the LLRice fiasco has demonstrated that it takes a very long time to clean unapproved GM crops from contaminated commercial supplies.\textsuperscript{156}

As the LLRice case illustrates, the U.S. government underestimated the additional costs that farmers would incur in cases of accidental contamination. The U.S. government demonstrated its ignorance when it established rules for the management of confined field trials, which resulted in a lack of comprehensive oversight, ultimately causing the accidental contamination. After investigating the LLRice contamination, the U.S. government decided to take no enforcement action against Bayer CropScience,\textsuperscript{157} the company that developed and field-tested LLRice, even though the accident caused farm losses of possibly over $1 billion.\textsuperscript{158}

\begin{itemize}
  \item \textsuperscript{152} E.U. Agric. & Rural Dev., \textit{supra} note 138.
  \item \textsuperscript{154} \textit{See Report of LibertyLink Rice Incidents, supra} note 38.
  \item \textsuperscript{155} \textit{Id.} at 4-6.
  \item \textsuperscript{157} \textit{Report on LibertyLink Rice Incidents, supra} note 38, at 1.
  \item \textsuperscript{158} \textit{See e.g., U.S. Gov't Accountability Office, GAO-09-60, Report to the
III. GM/NON-GM COEXISTENCE: ACCOUNTING FOR MARKET RISK

The economic effects of deregulation of a GM crop on non-adopters and on domestic and foreign markets are obviously important but typically are not a serious part of the deregulation decision. The risk of GM contamination and unintended GM seed material introduction in a non-GM market chain is a negative externality; non-adopters bear the risk of losing access to markets because of contamination. The benefits and costs of deregulation for the market as a whole should be considered, but the USDA does not routinely consider them in its decision-making process.

Several recent court cases brought by public interest groups have demonstrated that the USDA should pay more attention to the economic impacts of GM contamination on conventional and organic farming.
Regarding GM bentgrass and alfalfa, both the Washington DC Federal Court\textsuperscript{164} and the Northern California Federal Court\textsuperscript{165} in 2007 found that the USDA failed to provide a complete environmental impact statement (EIS)\textsuperscript{166} under the National Environmental Policy Act (NEPA). In 2009, the reached a similar conclusion on GM sugar beets.\textsuperscript{167} Under NEPA, the USDA is supposed to conduct a full environmental assessment, including a basic economic assessment of the effects of a GM crop on non-adopters, where there is likelihood of significant environmental effects.\textsuperscript{168} Such assessments however had not been conducted because the USDA considered that there was no likelihood of significant effect.

The case of alfalfa is the most revealing.\textsuperscript{169} In 2007, the U.S. District Court of Northern California issued a ruling that clearly highlighted some important gaps in the current system.\textsuperscript{170} One major problem underscored by the alfalfa case is the lack of federal rules regarding accidental contamination of organic products with GM material.\textsuperscript{171} The USDA maintains that producers may not “necessarily” lose their organic certification if they unintentionally sell contaminated organic crops.

\textsuperscript{164} Int’l Ctr. for Tech. Assessment, 473 F. Supp. 2d at 29.
\textsuperscript{165} Geertson Seed Farms, 2007 WL 518624 at *12.
\textsuperscript{166} An EIS is a complete assessment of potential environmental and human health effect. See 40 C.F.R. § 1502 (2011).
\textsuperscript{167} Ctr. for Food Safety v. Vilsack, 2009 WL 3047227 at *9 (N.D. Cal. Sep. 21, 2009); Waltz, supra note 163, at 970.
\textsuperscript{168} 42 U.S.C. § 4332(C); Apart from adventitious presence and non-GM certification in the three contended cases (alfalfa, bentgrass, and sugarbeet), there is also a nonzero likelihood of geneflow to weedy relatives in the U.S., which is not the case for corn or soybeans. See COMM. ON THE IMPACT OF BIOTECHNOLOGY ON FARM-LEVEL ECON. AND SUSTAINABILITY, NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., supra note 5, at 107-12.
\textsuperscript{169} See Endres, supra note 43, at 141 (discussing this case and its consequences).
\textsuperscript{170} Geertson Seed Farms, 2007 WL 518624 at *6.
\textsuperscript{171} Geertson Seed Farms, 2007 WL 518624 at *5; Organic standard is a production process, i.e., the presence of GM or other prescribed materials in the final product does not preclude the presence of a standard. See generally James Deaton & John P. Hoehn, The Social Construction of Production Externalities in Contemporary Agriculture: Process Versus Product Standards as the Basis for Defining “Organic”. 22 Agric. & Human Values 31, 31-38 (2005).
because of the lack of testing and the fact the USDA national organic standard is based on production process. Some organic producers may not agree as the market test may not be the same as the legal standard; consumers expect zero GM content in organic products, regardless of the official organic standard, and producers do not want to cheat them.

As the Court indicated, even if the USDA allowed contamination of organic alfalfa to occur through high tolerance levels for adventitious presence, and sellers could still claim organic status when contamination occurred accidentally, this would not correspond to what organic consumers believe they are buying: “many farmers and consumers have higher standards than what the federal government currently permits; to these farmers and consumers organic means not genetically engineered, even if the farmer did not intend for his crop to be so engineered”. In other words, organic consumers could feel cheated and organic producers would feel that they do not produce an organic GM-free product. The right to produce organic is different from the right to sell a product that is labeled organic.

The case resulted in a temporary ban in the planting of GM alfalfa in 2008, but was appealed and later reviewed by the U.S. Supreme Court. The outcome was that the USDA completed its first EIS of a GM crop for alfalfa. The Supreme Court decision also prompted the USDA to consider coexistence measures. In effect, at the conclusion of

174 The right to produce organic represents farmer’s choice to adopt certified organic practices and avoid prohibited substances to comply with the organic standard and adhere with its philosophy. The right to sell labeled organic product is simply the right to sell products that comply with certification standards without certainty of GM –free status.
176 Monsanto Co. v. Geertson Seed Farms, 130 S. Ct. 2743, 2749 (2010).
the EIS, the USDA Secretary offered two options for moving forward, either unconditional deregulation, or conditional deregulation with coexistence measures (such as geographic restrictions and isolation distances). But after consultations in the US Congress, and reported industry pressures, on January 27 2011, the USDA opted to deregulate the crop unconditionally. Thus, even if contamination options were considered for the first time, they were left aside by the regulators.

In a similar case, concerning a much larger commercial crop, the GM sugar beet case did advance discussions around coexistence guidelines at the USDA. The 2008 case was filed in the U.S District Court for Northern California by a coalition of organic farmers, consumers and environmental groups that were concerned about the GM trait affecting organic sugar beet and related crops. While courts were discussing the case, the herbicide tolerant sugar beet was rapidly adopted by 59% of farmers within a season, and reached a 95% adoption the second season. In 2010, discussions around the case focused on whether GM sugar beets could still be planted while the USDA complied with its requirement to provide an EIS. In August 2010 the District Court ruled that GM sugar beets could not be planted, and in December 2010 the Court ordered growers to pull from the ground 265 acres of baby beet plants that were intended for use in 2012, this resulted in market fears that insufficient seed supplies would cause a large drop in US sugar production in the 2011 season.

In February 2011, while the EIS was being finalized, the USDA issued a temporary partial deregulation of GM sugar beets. This

178 Under the Supreme Court ruling, the USDA has the authority to grant partial deregulation. Monsanto, 130 S. Ct. at 2761; Pollack, supra note 53.
180 Waltz, supra note 163.
182 Lucas Lauren, Sugar beets still in the game, 28 Nature Biotechnology 992 (2010).
183 Ctr. for Food Safety v. Vilsack, 734 F. Supp. 2d 948, 955 (N.D. Cal., 2010).
184 Ctr. for Food Safety v. Vilsack, 753 F. Supp. 2d 1051, 1062 (N.D. Cal., 2010).
allowed GM sugar beets to be planted in 2011 under eighteen specific conditions (listed in a compliance agreement) including a requirement that the GM beets be planted at a minimum distance from organic sugar beets or other related plants.\(^{187}\) While this decision could be seen as a step towards coexistence guidelines, the conditional requirements were intended to be temporary\(^{188}\) in order to avoid market disruption until the completion of the EIS. But the decision was not well received by the plaintiff organizations, who filed a legal challenge to USDA’s decision.\(^ {189}\) Interestingly it was not accepted by the developing company either, who felt that the EIS was unnecessary.\(^ {190}\) Regardless of this,\(^ {191}\) the sugar beet case shows that while the USDA considers coexistence as an issue, it has maintained a reactive posture that may not be sustainable, especially as new cases are brought to courts.

These two cases underline the lack of involvement of the USDA in managing market risks before planting, leaving this task to the industry. But do the companies effectively respond to market risks? Perhaps because of the difficulty for non-GM farmers to establish liability,\(^ {192}\) whether under private nuisance, trespass, or strict liability,\(^ {193}\) the response has not been sufficient. The soybean industry is the only industry that has developed


\(^{190}\) Layton, *supra* note 189 (noting Monsanto’s subsequent suit against the government for not fully deregulating GE sugar beets).


\(^{192}\) See Cox, *supra* note 172, at 409.

\(^{193}\) Id. at 409-11.
a comprehensive stewardship program to ensure that unapproved GM or approved GM does not enter the non-GM chain and that exports are being maintained.\textsuperscript{194} Other commodity groups, such as corn, rice, and wheat, have adopted voluntary measures that have not been as successful.\textsuperscript{195} The Biotechnology Industry Organization has developed voluntary stewardship guidelines encouraging strict confinement of field trials, and a market risk assessment with import approval before domestic commercialization.\textsuperscript{196} Yet, recent events demonstrate that these practices are not yet universal applied by all companies.

Certain states have tried to advance specific legislations to cope with the lack of federal rules, and the challenges for any farmer to get compensated for loss of organic certification, but their efforts have been limited.\textsuperscript{197} With new GM crops and products (like salmon) in the process of being approved, this approach may become more successful in moving forward in the future. In the absence of federal rules, however, contaminations could still happen.

As of now, USDA’s Animal and Plant Health Inspection Service (APHIS) is only required to include safety considerations in its decision-making; the result of an economic assessment, if conducted (e.g., for alfalfa), is not even a factor in the deregulation decision.\textsuperscript{198} Reforming the system would require introducing market risk assessments. As a result of the assessment, the USDA might determine that a new GM crop facing or creating large commercial risks could only be grown under...

\textsuperscript{194} The American Soybean Association introduced a rigorous eleven-point stewardship program in 1999 (before the StarLink debacle), and imposed it on biotech companies willing to sell new GM soybean varieties. Among other things, the plan requires companies to obtain approval for imports in the sixteen top markets for US soybeans. See Redick, \textit{supra} note 101; Thomas P. Redick & Michael J. Adrian, \textit{Do European Union Non-Tariff Barriers Create Economic Nuisances in the United States?}, 1 J. Food L. & Pol’y 87, 120-21, 129-30 (2005).

\textsuperscript{195} Redick & Adrian, \textit{supra} note 194, at 122-24.


\textsuperscript{197} See Cox, \textit{supra} note 172, at 413-17; Thomas P. Redick & Donald L. Uchtmann, \textit{supra} note 66, at 227-29.

\textsuperscript{198} Interview with Andrew Roberts, U.S. Dep’t of Agric., Animal & Plant Health Inspection Serv., Bureau of Regulatory Serv. (Nov. 2009).
certain geographical or temporal restrictions, with buffer zones, and/or traceability and segregation rules. 199

Of course, a full assessment would not be required in all cases, simply because not all crops present the same potential market risk. There are biological and marketing differences across cases, e.g., produce and grains are not sold the same way. Going forward, the USDA should strive to consider which new crops constitute a significant economic risk and which do not.200 A decision tree could be used to decide whether a case requires a full assessment and what questions should be asked.201 Even the EE approval of new GM crops does not entail a formal assessment of the potential commercial market risks.202 We caution that market tests that are too stringent could easily transform into a “precautionary approach” like the EU’s regulatory approach, which would be a clear mistake. Preventing commercialization of potentially promising crops for an unsubstantiated reason (unproven risk) would be detrimental to farmers and consumers: it would result in less R&D effort, and could affect long term agricultural productivity with global effects including on food security.


200 For instance, Argentina, one of the leading GM crop-adopting nations, has included export risk assessment (and more specifically, the risk of losing exports to Europe) as a mandatory step before approval of new GM crops. Jose Benjamin Falck-Zepeda & Patricia Zambrano, Socio-economic Considerations in Biosafety and Biotechnology Decision Making: The Cartagena Protocol and National Biosafety Frameworks, 28 Rev. Pol’y Res. 171, 182-83 (2011).


202 Falck-Zepeda & Zambrano, supra note 200, at 183.
IV. CONCLUSION: A BATTLE AGAINST THE STATUS QUO

While the escape of unapproved GM material from confined field trials (or specific market channels) and the unintended commingling of approved GM with non-GM crops are very different situations, they both arise from a lack of regulatory oversight. In the first case, all farmers stand to lose and it is often the legal responsibility of the developing company. In the second case it is a coexistence issue in the marketing channel. Recent events have shown that even the U.S. courts do not provide sufficient incentive for companies to proactively contain market risk. But court decisions have demonstrated that the implicit laissez faire approach on coexistence is not sustainable.

Current procedures for approving and managing GM crops in the U.S. could be improved at a relatively low cost compared to the damage that has already occurred under the current system. The U.S. government should begin by clarifying rules and responsibilities regarding: 1) the management of confined field trials of unapproved GM events; 2) coexistence at the approval stage, at the field level, and in the supply chain; and 3) the thresholds for adventitious presence for organic and non-GM. The government should help to anticipate and manage market risks from the time of field trials to commercial release.

In parallel, large importers should also reconsider the issue of zero tolerance for unapproved GM products. In 2008, the World Health Organization/United Nation Food and Agricultural Organization’s Codex Alimentarius Commission introduced a procedure for temporary approval of unapproved GM material present at low levels in imports and that have been authorized in the country of export.203 Yet, despite an international consensus around these guidelines, as of March 2011, no country had explicitly adopted this approach.

In contrast, the EU Commission does test for unapproved biotech crops under its Rapid Alert system.204 In an attempt to avoid further trade disruption, at the behest of its animal feeding industry, the

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EU has proposed use of a non-zero (0.1%) tolerance level for unapproved events intended for animal feed in the process of approval.\textsuperscript{205} For instance, this tiny tolerance may help to avoid the costly temporary ban of GM soybeans imports from unintended commingling of traces of unapproved corn, but the measure would not include crops not yet preliminarily approved by the European Food Safety Authority in the multi-step EU approval process (like LL601 rice or Bt34 rice from China).\textsuperscript{206}

Past mistakes with accidental contamination were major setbacks to the global biotechnology revolution in agriculture with untold costs. Beyond economic impacts on U.S. farmers, these incidents have had a much wider impact on the acceptance of biotechnology.\textsuperscript{207} In particular, developing countries that are in the process of creating their biosafety regulations have questioned the feasibility of regulating GM crops and producing both GM and non-GM crops with the hindsight of U.S. contamination incidents.\textsuperscript{208}

There is evidence that the need for regulatory overhaul is commonly known, and has been known for a long time,\textsuperscript{209} but there is a strong reluctance to change. Biotechnology companies have developed guidelines

\begin{itemize}
\item \textsuperscript{206} \textit{Id}.\textsuperscript{2}/1
\item \textsuperscript{208} See generally \textit{Bratspies, supra note 64} (using the StarLink case to highlight structural flaws in the regulatory process and proposing a comprehensive new approach toward regulation of GM crops); Michael R. Taylor & Jody S. Tick, \textit{Post-Market Oversight of Biotech Foods: Is the System Prepared? Pew Initiative on Food and Biotechnology} (2003) (analyzing post-release and post-market oversight issues posed by biotech crops, as well as the adequacy of U.S. government policies and programs to address them); \textit{Genetically Engineered Crops, supra note 39}, at 34 (discussing proposed regulatory changes by U.S. agencies to enhance oversight of GM crops).
\item \textsuperscript{209} See, \textit{e.g.}, \textit{Bratspie, supra note 64}; Taylor & Tick, \textit{supra note 208}; \textit{Genetically Engineered Crops, supra note 39}.
\end{itemize}
around the issue of possible unintended movements but companies may not apply them consistently. Several grain associations have tried to adopt stewardship programs designed to manage market risks, but they have not all been successful. In the absence of federal action, certain States have tried to advance towards their own measures, but only on specific and limited cases. The USDA has acknowledged the issue but not addressed it. The USDA Secretary has repeatedly emphasized the fact that the regulations needed to be revised to ensure the viability of GM and non-GM production, going as far as proposing a set of new coexistence rules for the case of alfalfa, but he was pushed to retract his position and deregulate alfalfa unconditionally. Attempts to address these issues have come from every level, but it is the federal government who sits in the best position to regulate. The stakes are too high for policy makers to defend the status quo. GM crops hold tremendous promise for the future of U.S. and world agriculture, but they must be managed and regulated in a way that assures the marketplace that economic risks are properly managed.

210 Cox, supra note 172, at 416-17 (describing legislative proposals in California and Vermont); Redick & Uchtmann, supra note 66, at 232-33 (citing the example of rice in California).


212 Neuman & Pollack, supra note 185, at B7; Voosen, supra note 57.

FISHING FOR THE PUBLIC TRUST DOCTRINE: THE SEARCH FOR A LEGAL FRAMEWORK TO GOVERN OPEN OCEAN AQUACULTURE IN AMERICA’S FEDERAL WATERS

Kenneth R. L. Parker

The experience of New England’s plenty began with the fish of the coastal waters, which had been the original reason that Breton, Portugese, and Bristol fishermen started visiting the area in the fifteenth century. “The aboundance of Sea-Fish,” wrote the Reverend Francis Higginson in 1630, “are almost beyond believing, and sure I scarce have believed it except I had seene it with mine owne eyes.” John Brereton described how, in a few hours of fishing, he and his companions “had pestered our ship so with Cod fish, that we threw numbers of them over-board againe.”

Historian William Cronon describing the abundance of fish in the waters off colonial New England

He has plundered our Seas, ravaged our Coasts, burnt our Towns, and destroyed the Lives of our People.

From the Declaration of Independence, in reference to King George III of Great Britain

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2 The Declaration of Independence para. 26 (U.S. 1776).
INTRODUCTION

Near the core of American sovereignty is the idea that our nation exists, in large part, to protect the right of its people to provide for our basic human needs. There is perhaps no right more important than the right to feed ourselves and our families. In America’s youth, there was no surer source of sustenance for the people than the bounty of our coastal waters. But the duty of the nation-state to protect the people’s right to fish did not originate here. Under the public trust doctrine, the sovereign “holds tidelands in trust for the use of the public for, traditionally, fishing, fowling, and navigation.” This doctrine protects the people’s right to fish in coastal waters and is said to date back to the time of Emperor Justinian in ancient Rome. It is a doctrine so well suited to American values and our system of common law that it has found its way into the decisions of courts throughout the nation.

4 The attribution of the public trust doctrine to the laws of Justinian is the subject of recent controversy. This reference is often repeated in articles discussing the doctrine. See Joseph L. Sax, The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention, 68 Mich. L. Rev. 471, 475 (1970). A LexisNexis search of law review and law journals for references to this article that include the name “Justinian,” conducted on July 25, 2011, returned 106 results. See, e.g., Philip Weinberg, Conference on the Public Trust Doctrine: The Public Trust Doctrine and the Hudson River Valley: A Case of Value Preservation, 4 Alb. L.J. Sci. & Tech. 37, 42 (1994) (“This doctrine, thoroughly well-examined in the conference held in 1991, has, since the time of Justinian, required the state to hold underwater lands, and more recently parklands, in trust for its citizens.”); Rachael E. Salcido, Law Applicable on the Continental Shelf and in the Exclusive Economic Zone, 58 Am. J. Comp. L. 407, 432 (2010) (“The concept originated from the Institutes of Justinian, and gained particular emphasis by conservationists in the United States following Joseph Sax’s influential article in 1970.”); Tracey Dickman Zobenica, Note, The Public Trust Doctrine in Arizona’s Streambeds, 38 Ariz. L. Rev. 1053, 1056 (“Values associated with the public trust doctrine can be traced back to Roman law and the writings of the Emperor Justinian, which declared natural law communal rights in the most basic of resources: air, running water, the sea, and its shores.”). However, Sax’s argument has also been criticized as quoting Roman law out of context. See James L. Huffman, Speaking of Inconvenient Truths – A History of the Public Trust Doctrine, 18 Duke Envtl. L. & Pol’y F. 1, 11 (2007).
5 Some of these decisions will be discussed infra.
The idea that government entities hold certain lands and waters in trust for the public suggests that those entities derive both duties and powers from their trusteeship. Just as a fiduciary has a duty not to squander entrusted funds and has the power to invest them, it can be argued that the sovereign has a duty not to despoil or give away public trust resources, as well as a power to enact laws and regulations protecting those resources.

The development of the public trust doctrine has been neither uniform nor steady. Over time, many jurisdictions have expanded the doctrine’s breadth to include recreation and matters of public interest far beyond the original protected activities of fishing, fowling, and navigation and have applied the doctrine to lands that are no longer under water or, in some cases, never were under water. Thus, it may be said that U.S. courts have recognized a number of public trust doctrines, rather than one uniform rule of law, and that some of these doctrines have grown far from their origins.

The abundance of fish in the coastal waters of colonial New England described by historian William Cronon has been reduced by centuries of overfishing to the point where many once-plentiful fishing grounds are now almost totally devoid of the species, such as cod, whose vast numbers gave such places as Cape Cod their names. Cronon’s described bounty is in sharp contrast to today’s reality, in which fishery management plans have closed once-plentiful areas of the coastal waters to fishing, in hopes that fish populations might recover.

In the face of radically declining fish stocks in U.S. coastal waters, science and industry have developed new techniques and technologies for cultivating seafood. Fish farms, with ponds in place of corrals, were part of the first wave of what is now known as aquaculture and continue

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6 For example, New Jersey law applies the public trust doctrine to the dry sand area of public beaches. See Borough of Neptune City v. Borough of Avon-by-the-Sea, 294 A.2d 47, 50 (N.J. 1972).

7 Cronon, supra note 1, at 22.

8 Each fishery management council has a website on which it posts closures and other fishing restrictions. For example, the Gulf of Mexico Fishery Management Council currently lists three closures on its webpage. Reef Fish Management Plans, GULF OF MEX. FISHERY MGMT. COUNCIL, http://www.gulfcouncil.org/fishery_management_plans/reef_fish_management.php (last visited Apr. 8, 2011).
to grow rapidly as a source of food for people around the world. The framework of laws and regulations governing agriculture was readily adapted to address the impacts and demands of this form of land-bound aquaculture. But a new generation of aquaculture technology has raised challenging new legal questions. Over the last decade, net-pen enclosures that allow fish to be cultivated offshore have been pioneered. This new practice, known as “open ocean aquaculture,” raises the possibility of restoring some of the lost seafood-producing capacity of America’s coastal waters. However, the ability to test this new technology has been impeded by two major factors: the lack of a legal and regulatory framework for open ocean aquaculture in federal waters and environmental concerns regarding the impacts of this new technology on ocean ecosystems and wild fish populations.

Applying the public trust doctrine to open ocean aquaculture has the potential to address both of these obstacles. However, sorting out the details of how this might be accomplished is no simple matter, especially given the lack of clarity from the layered legal authority governing U.S. coastal waters beyond the traditional bounds of state authority.

In order to find a public trust doctrine that will provide a binding rule of law governing open ocean aquaculture in federal waters, it is necessary first to find a public trust doctrine that applies in federal waters. A number of legal scholars have observed the role of the public trust doctrine in state waters and explored its possible application to federal waters. Much of this scholarship is summarized in The Silver Anniversary of the United States’ Exclusive Economic Zone: Twenty-Five Years of Ocean Use and Abuse, and the Possibility of a Blue Water Public Trust Doctrine, in which the authors pose the following questions:

(1) does a federal public trust doctrine exist; (2) if so, can we rightfully extend it to include the entirety of the U.S. ocean waters; and (3) could the doctrine provide the missing catalyst for federal agencies to manage the


10 The development of net-pen enclosures and their use will be discussed, infra, Section II.
use of U.S. ocean resources in a coordinated, sustainable fashion?\textsuperscript{11}

The authors answer all three questions in the affirmative, not by identifying a clear, binding authority that applies the public trust doctrine to federal waters,\textsuperscript{12} but through a utilitarian argument that the public trust doctrine “could uniquely provide a powerful and intuitive framework for restructuring the way we manage ocean resources . . . [and] that the most robust federal public trust doctrine would be established by a mutually reinforcing combination of judicial interpretation, congressional mandate, and executive action.”\textsuperscript{13}

This formulation of the federal public trust doctrine presents the possibility that with congressional action, this ancient rule of law might be applied to the management of federal waters and, therefore, to open ocean aquaculture. But predicking enforcement of the public trust doctrine in federal waters on congressional action presents a number of problems, the most basic of which is that Congress might fail to act, which has been the pattern to date with respect to open ocean aquaculture. The National Oceanic and Atmospheric Administration ("NOAA") has made repeated efforts to spur the development of federal standards for the licensing of open ocean aquaculture, filing the National Offshore Aquaculture Act of 2005\textsuperscript{14} and the National Offshore Aquaculture Act of 2007,\textsuperscript{15} as well as organizing the 2007 National Maritime Aquaculture Summit to promote this legislation.\textsuperscript{16}


\textsuperscript{12} Turnipseed et al. attempt to find a binding federal public trust doctrine, as discussed in Section VI, infra, but their reliance on Gibbons v. Ogden is unpersuasive.

\textsuperscript{13} Turnipseed et al., supra note 11, at 69.

\textsuperscript{14} S. 1195, 109th Cong. (2005). The bill was read twice and referred to the Committee on Commerce, Science, and Transportation on June 8, 2005, receiving no further action.

\textsuperscript{15} S. 1609, 110th Cong. (2007). The bill was read twice and referred to the Committee on Commerce, Science, and Transportation on June 13, 2007. The committee did not act on the bill.

\textsuperscript{16} The Summit took place on June 26-27, 2007. According to the official summary
Even if Congress did codify the public trust doctrine into law applicable to federal waters, would that law necessarily reflect the intent of the doctrine, or would it be burdened with conditional provisions and exceptions? Would the public trust doctrine retain any of its value if subjected to the legislative process? Or would it be reduced to mere words, whose only meaning could be found in the definitions provided by the legislation? In other words, is the public trust doctrine useful only as a guiding principle for legislators, judges, and administrators, or is it a binding rule of law?

When applied to state waters, tidelands, and formerly submerged lands, the public trust doctrine has been found time and again to have binding legal force.\(^\text{17}\) Can the same be said for federal waters? The Supreme Court has given mixed signals on this question. On the one hand, the Court has upheld state enforcement of the doctrine against private interests.\(^\text{18}\) On the other hand, the Court has declined to impose

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\(^{17}\) A Westlaw search for court decisions containing the terms “public trust doctrine” and “tidelands” reveals 182 state and federal decisions (as of Aug. 4, 2011). *See*, *e.g.*, Nat’l Audubon Soc’y v. Super. Ct., 658 P.2d 709, 712 (Cal. 1983) (discussing “the public trust doctrine which, after evolving as a shield for the protection of tidelands, now extends its protective scope to navigable lakes”); Fafard v. Conservation Comm’n of Barnstable, 733 N.E.2d 66, 70 (Mass. 2000) (“Under the public trust doctrine, sovereigns hold shorelands in trust for the use of the public.”); Estate of Tenney v. S. Carolina Dep’t of Health & Envtl. Control, No. 26965, 2011 WL 1643561, at *4 (S.C. Apr. 25, 2011) (“Under the public trust doctrine, the State holds presumptive title to tidal land below the high water mark to be held in trust for the benefit of all people of South Carolina.”).

\(^{18}\) *See* Phillips Petroleum Co. v. Mississippi, 484 U.S. 469 (1988) (holding that the State of Mississippi held title to land under flowed tidelands per the public trust doctrine, not the petitioner landowners who had record title dating back to pre-statehood Spanish land grants.).
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a public trust duty to act on the federal government, instead deferring to Congress as the arbiter of the federal “public trust.”

The question then becomes not whether a federal public trust doctrine can be devised and applied to federal waters through a concert of legislative, judicial, and executive action, but rather whether a state assertion of its public trust duties and powers that extends into federal waters would be upheld by the Supreme Court. That is to say, do the public trust duties of the states terminate at the border between state and federal submerged lands, or can state assertion of public trust authority be extended into federal waters? If it can be extended, then the public trust doctrine would be well suited to provide a framework for state action to regulate the use of net-pen enclosures in federal waters.

A clue to answering this question may be found in a surprising, yet appropriate, place: a decision by America’s oldest continuously-functioning appellate court, the Supreme Judicial Court of Massachusetts, surprising because the decision was not about fishing, but rather concerned with the impact of wind farms, and yet appropriate because those wind farms were to be located in the very waters that John Brereton found to be so teeming with “Cod fish” nearly four centuries before. In considering the applicability of the public trust doctrine to power transmission lines that extended beyond state waters, the Supreme Judicial Court held in Alliance to Protect Nantucket Sound v. Energy Facilities Siting Board that it could consider the in-state impacts of portions of the power lines that extended beyond the traditional three-mile limit of Massachusetts state authority.

The intriguing possibility raised by this decision, in the context of the entire line of Massachusetts Supreme Judicial Court decisions regarding the public trust doctrine, is that it may serve as a road map for the application of state public trust doctrines to federal waters. This

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19 Light v. United States, 220 U.S. 523, 537 (1911) (“‘All the public lands of the nation are held in trust for the people of the whole country.’ And it is not for the courts to say how that trust shall be administered. That is for Congress to determine.”) (internal citation omitted).

20 About the Court, Mass. Judicial Branch, http://www.mass.gov/courts/sjc/about-the-court.html (last visited Dec. 31, 2011) (“The Supreme Judicial Court, originally called the Superior Court of Judicature, was established in 1692 and is the oldest appellate court in continuous existence in the Western Hemisphere.”)

approach might allow states to regulate open ocean aquaculture beyond their traditional three-nautical-mile jurisdictional limitation.22

To evaluate this possibility, it is necessary to examine the gap in legal and regulatory authority governing open ocean aquaculture. It is then necessary to explore the limits of state authority under the public trust doctrine, and to ask whether any countervailing principles of federalism or actions by Congress might preclude application of state public trust doctrines to open ocean aquaculture in federal waters. This exploration will demonstrate that such extraterritorial application of state public trust powers and duties might be consistent both with the Constitution and with the other legal doctrines and management tools contemplated for governance of open ocean aquaculture.

Section I of this article lays out some of the terminology that will be used throughout the discussion. Section II offers some background on the current state of open ocean aquaculture in U.S. coastal waters. In particular, it discusses recent technological advances demonstrating the potential viability of open ocean aquaculture and notes that the greatest obstacle to the growth of this industry may be the lack of a governing regulatory framework. Section III turns to the policy implications of expanding open ocean aquaculture. It grapples with the question of whether the growth of this industry, governed by the public trust doctrine, would serve society’s interest. Three subsidiary questions are discussed: (1) whether expansion of open ocean aquaculture through the public trust doctrine would be good for the environment and ocean ecosystems; (2) whether open ocean aquaculture using net-pen technology presents a meaningful opportunity to increase seafood production; and (3) whether state permitting processes for open ocean aquaculture provide adequate opportunity for the use of net-pen technology. Section IV examines the current legal authority for open ocean aquaculture in federal waters. It observes that there is no clear legal authority on point. Section V delves into the evolution of the public trust doctrine in the United States, beginning with the Supreme Court jurisprudence on the topic, followed

22 The original thirteen colonies had territorial waters of three nautical miles, while Florida and Texas as former Spanish colonies had territorial waters of nine nautical miles (on the gulf coast side). Other states were granted territorial waters of three nautical miles under the “equal footing” doctrine when they joined the union. See Submerged Lands Act, 43 U.S.C. §§ 1301-1315 (1986) (originally enacted as Act of May 22, 1953, ch. 65, Title II, § 3, 67 Stat. 30).
by an examination of state court cases, then a look at application of the public trust doctrine to fishery management in state waters. The section concludes with a discussion of whether allowing open ocean aquaculture in state waters is consistent with the public trust doctrine, finding that it is consistent. Section VI then asks whether there is an existing federal public trust doctrine applicable to federal waters. An examination of the scholarship reveals that no such doctrine has been established. Section VII explores a number of theories under which state public trust doctrines might be applicable in federal waters. Specifically, the section examines the applicability of extraterritoriality, delegation, gap-filling, joint jurisdiction, and international law to the question, concluding that there are viable channels through which state public trust doctrines might be applied in federal waters. Section VIII turns to some of the practical implications of applying state public trust doctrines in federal waters. In particular, it looks at the compatibility of public trust principles with policy tools that are now being applied in those waters, including area-wide management, ocean zoning, Limited Access Privileges Programs ("LAPPs") and similar private-property regimes, Clean Water Act enforcement, marine protected areas, and regional ocean governance. The discussion of these tools concludes that most are compatible with the public trust doctrine. Section IX draws some conclusions about the efficacy of using the public trust doctrine to govern open ocean aquaculture.

I. A BRIEF DISCUSSION OF TERMINOLOGY

In areas of law where the same terms are used to describe multiple legal principles and where gray areas of the law allow overlapping doctrines and authorities to apply, it is helpful to define how such terms will be used. Similarly, where changing technology and practices are referred to using an evolving lexicon, it is helpful to specify the intended meanings of important terms.

“State waters” refers to the coastal waters covering the submerged lands over which state governments have authority under the Submerged Lands Act of 1953.23 For all states except Florida and Texas, state waters

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23 What exactly that authority consists of and how it interacts with federal authority will be the subject of much of this article. For statutory authority, see supra note 22.
extend three nautical miles from the shore.\textsuperscript{24}

“Federal waters” refers to all waters within the 200-mile Exclusive Economic Zone (“EEZ”) that are not state waters. This definition incorporates both the traditional federal territorial waters, which extended from the edge of state waters to twelve miles from the shoreline, as well as the EEZ waters, over which President Reagan asserted authority in 1983.\textsuperscript{25}

“Open ocean aquaculture” refers to the cultivation and harvesting of fish in enclosures on or near the surface of state or federal ocean waters. Synonymous terms include “ocean fish ranching” and “marine aquaculture.”

II. THE CURRENT STATUS OF OPEN OCEAN AQUACULTURE

In order to understand the need for a regulatory framework governing open ocean aquaculture in federal waters, it is necessary first to examine the state of the industry and its technology. Open ocean aquaculture has existed in the United States since the mid-1990s and is a rapidly changing industry. In his 2006 report, \textit{Growing Seafood in the Open Ocean: Offshore Aquaculture in the United States}, Rollie Barnaby discusses the first decade of its development:

No open ocean aquaculture operations existed in the U.S. prior to 1996, other than an unsuccessful attempt to attach fish cages to oil rigs in the Gulf of Mexico and some experimental cage projects at the University of New Hampshire (UNH), the Massachusetts Institute of Technology (MIT) and Ocean Spar Technologies, a company based in Bainbridge Island, WA . . . . In U.S. waters today, there are three active commercial farms, an experimental demonstration project in New Hampshire, and at least five companies awaiting permits.\textsuperscript{26}

\textsuperscript{24} See \textit{supra} note 22.


Barnaby goes on to discuss some of the technical challenges to open ocean aquaculture and the technological advances that have addressed them: “Perhaps the most important development in offshore aquaculture in the past decade was the introduction of a submersible fish containment device, or cage. In 1994, Ocean Spar Technologies received a National Marine Fisheries Service Saltonstall-Kennedy grant to design and build a ‘towable’ fish cage for the salmon industry.” 27 These cages are able to withstand ocean currents. 28 New competition has furthered development in the industry. For example, Ocean Farm Technologies, Inc. advertises its self-propelling Aquapod net-pen as being shark-proof. 29

The use of these net-pen enclosures has been monitored to determine health effects on the fish being cultivated and environmental impacts on ocean ecosystems, including impacts on native fish outside the enclosures. 30 Each net-pen site “was required to have a comprehensive monitoring plan in place before receiving a permit.” 31 Barnaby reports that fish have thrived in these net-pens. 32

With new technology making open ocean aquaculture more feasible, the industry has turned to issues of permitting and regulation. “Permitting is the greatest impediment to the development of open ocean aquaculture. All of the open ocean farms in operation are located in state

27 Id. at 6-7.
28 Id. at 7.
30 Barnaby, supra note 26, at 12 (“Traditional coastal fish farms have often been accused of negatively impacting the environment, creating a build-up of waste that harms native species. Such negative impacts are less likely in an open ocean environment, where waters are much deeper and waste is more widely dispersed. Each open ocean aquaculture operation was required to have a comprehensive monitoring plan in place before receiving a permit. All but one of the projects have partnered with universities to design and implement their monitoring plans.”).
31 Id. at 12. Barnaby goes on to report positive environmental results: “To date, UNH’s stringent monitoring program has found no measurable environmental impacts in the Gulf of Maine.” Id.
32 Id. at 8 (“The UNH demonstration project has successfully grown flounder, halibut, cod, haddock and blue mussels at its offshore site. Growth rates have been excellent and the health of the fish has been very good.”).
waters, and each farm has had to deal with a unique permitting process within its state.”33

Barnaby’s description of the challenges of permitting in open ocean aquaculture raises two questions. First, how can state permitting processes be improved? Second, is there a way to develop a model for regulating open ocean aquaculture in federal waters? This article will focus primarily on the latter question, but it will delve into improving state permitting processes to the extent that applying the public trust doctrine to open ocean aquaculture might simplify coordination of state and federal approvals.34

III. THE VALUE OF APPLYING THE PUBLIC TRUST DOCTRINE TO THE REGULATION OF OPEN OCEAN AQUACULTURE IN FEDERAL WATERS

Before examining whether the public trust doctrine can serve as legal authority for the governance of open ocean net-pen aquaculture in federal waters, it makes sense to examine the need for this authority: would the discovery of such authority serve the public interest? Would expansion of open ocean aquaculture to federal waters be a positive development in American food and agriculture policy? A brief examination of three subsidiary questions will help illuminate further points in the discussion.

A. Would expansion of open ocean aquaculture through the public trust doctrine be good for the environment and ocean ecosystems?

Open ocean aquaculture has the potential to cause significant environmental harm in a number of ways, including: escapes that reduce the health of wild fish populations; the introduction of diseases and parasites into ocean waters; nutrient and habitat impacts of untreated wastes from open net-pen systems; impacts on populations of predators that are attracted to captive fish held in high density; drugs and chemicals used to promote the health of captive fish resulting in bacterial resistance in the environment; increased fishing pressure on wild fish stocks based on feed for farmed species containing high percentages of fish meal and

33 Id. at 15.
34 This possibility will be discussed, infra, in Section VIII.
fish oil that come from wild-caught fish; and socioeconomic impacts of farmed fish competing with wild fish in the marketplace.\textsuperscript{35}

Applying the public trust doctrine might mitigate some of these negative impacts; however, it is unclear whether such mitigation would be sufficient. It is worth noting, however, that even in the absence of clear legal authority for open ocean aquaculture in federal waters, NOAA decided in September 2009 to proceed with open ocean aquaculture in the Gulf of Mexico under existing authority.\textsuperscript{36} Although that plan was delayed by litigation\textsuperscript{37} (and will likely be delayed further by the 2010 British Petroleum oil spill), it may serve as precedent for similar efforts elsewhere. Further discussion of the environmental implications of using the public trust doctrine to regulate open ocean aquaculture will be included in Section VIII.

\textbf{B. Does open ocean aquaculture using net-pen technology present a meaningful opportunity to increase seafood production?}

The question here is not whether permitting open ocean aquaculture would necessarily lead to an increase in seafood production—the scientific, technical, and economic variables surrounding this question are largely beyond the scope of this inquiry. Germane to this analysis is whether putting such legal authority in place would likely improve productivity in this sector.

Among the reasons for the dramatic decline in seafood production in America’s coastal waters is overuse of a limited resource. The legal framework currently governing fishing in the United States allowed for this dramatic decrease in fish stocks. Understanding the role of this legal framework in the decline of fish stocks may prove helpful in evaluating whether net-pen aquaculture might help to reverse this trend.


\textsuperscript{35} Amy Lubrano, \textit{New Developments in Gulf of Mexico Aquaculture Plan}, 29.3 Water Log 3, 3 (2009).

\textsuperscript{37} Id. at 4.
in which he observes the tendency to deplete and destroy shared resources when individual actors have an incentive to maximize their use of those resources.\(^\text{38}\) Ocean fish populations have historically been such a resource, and their depletion is consistent with Hardin’s theory. However, net-pen aquaculture requires greater stewardship in that individual actors must invest in the cultivation of the fish they hope to harvest. While a fisherman can simply move on to another fishing ground when one is depleted, a fish farmer with a permit to have a net-pen in a given location has an interest in protecting the water quality and health of the ecosystem in that location. In other words, establishing a permitting system for open ocean net-pen aquaculture could have the effect of creating economic incentives for the preservation of healthy ocean ecosystems and the long-term sustainability of seafood production.\(^\text{39}\)

**C. Would state permitting processes for open ocean aquaculture provide adequate opportunity for the use of net-pen technology?**

In order to evaluate the need for open ocean aquaculture licensing in federal waters, it is helpful to examine existing licensing schemes available in state waters. A number of states have developed pilot programs for the licensing of net-pens in their state waters.\(^\text{40}\) Aside from the learning curve that has posed challenges during the development and initial implementation of the permitting processes discussed in Section II, there are other reasons why limiting open ocean aquaculture to state waters might prove problematic.

First, coastal waters are subject to significant competition for use, including navigation, recreation, and fishing, resulting in substantial practical limitations on the locations where net-pen permits can be issued in state waters, even in those states with pilot programs. For example, as


\(^{39}\) The possibility that open ocean aquaculture might lead to increased seafood production and sustainable use of ocean resources—while protecting ocean ecosystems—is dependent upon a number of factors, including the environmental and social considerations discussed by the Ocean Conservancy, *supra* note 35.

\(^{40}\) Barnaby, *supra* note 26, at 15.
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of July 2009, Hawaii had only two operating open ocean fish farms.\(^{41}\) As of August 2007, Maine, which has one of the nation’s most extensive programs, had just twenty-nine off-shore finfish leases.\(^{42}\)

Second, there may be environmental benefits to locating net-pens in deeper water and requiring that net-pens be dispersed over a wide area, both of which could minimize any negative environmental impacts posed by high-density fish populations.\(^{43}\)

Third, the high demand for seafood urges allowing the practice in as large an area as possible, since production would be severely limited if open ocean aquaculture were limited to the first three miles of the United States’ 200-mile EEZ.\(^{44}\) Finally, for the open ocean aquaculture industry to be economically viable, it is necessary to increase the number of potential locations for net-pens to achieve the critical mass needed to attract investment and to achieve economies of scale.

In evaluating the extent to which the three-mile state waters limitation poses an obstacle to the development of the U.S. open ocean aquaculture industry, it is helpful to examine the experience of other countries that do not have the American division of legal authority between state and federal waters. Australia’s Aquaculture Development Council commissioned a study “to determine the best options for aquaculture development in Western Australia.” The study found that:


\(^{44}\) As discussed above in Part I, President Reagan asserted U.S. authority over the 200-mile EEZ off the nation’s shores in 1983 through Proclamation 5030, supra note 25.
Open Ocean Aquaculture (OOA) was identified as offering the most realistic opportunity for marine fish aquaculture to develop in Western Australia to the scale that would enable this State to be competitive in global seafood markets. . . . The specific site identified for a potential Aquaculture Zone (AZ) off the west coast is located approximately 10 nautical miles west of Two Rocks, in Commonwealth waters.\(^{45}\)

If technical and economic considerations limit the viability of open ocean aquaculture in state waters, the extent to which permits for open ocean aquaculture in federal waters are allowed may determine whether the industry has a chance to succeed.

**IV. The Problem of Regulating Open Ocean Aquaculture in Federal Waters**

In order to apply a regulatory regime to an activity, it is necessary first to situate that activity within an area over which legal authority is available. Where no such legal authority exists, by default the activity remains unregulated and may proceed until such time as a legislative or regulatory authority with appropriate jurisdiction takes notice of the activity and promulgates rules governing it. This model has failed to provide a regulatory framework suitable to net-pen open ocean aquaculture in federal waters for two reasons.

First, open ocean net-pen aquaculture in federal waters defies ready categorization. It is not exploitation of the subsoil or seabed of the outer Continental Shelf, which under *United States v. California*\(^{46}\) and the Submerged Lands Act of 1953,\(^{47}\) in concert with

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the Outer Continental Shelf Lands Act of 1953,48 would be subject to federal jurisdiction. Nor is it a form of navigation, over which the federal courts have jurisdiction under Article III of the Constitution, which grants them power over all “admiralty and maritime” cases.49

Second, the investment required to place and stock a net-pen requires legal protection of ownership interests. If a stocked net-pen were to be considered abandoned property, then the fish it contained would be recoverable by anyone. Without a permitting system that protects the property rights of the permit holder to the net-pen and its contents, the person who placed and stocked the net-pen does not have a legal mechanism for asserting a property interest in the pen or the fish it contains. Thus, the lack of regulation is not useful to net-pen aquaculture, which—unlike most industries—requires regulation to exist.

So, if there is a policy need for a regulatory regime to govern open ocean aquaculture in federal waters, but no clear legal authority on point, where can such authority be found? NOAA has made repeated efforts to spur the development of federal standards for the licensing of open ocean aquaculture, filing the National Offshore Aquaculture Act of 200550 and the National Offshore Aquaculture Act of 2007,51 as well as organizing the 2007 National Maritime Aquaculture Summit to promote this legislation.52 Faced with congressional inaction, some

49 U.S. Const. art. III, § 2. See also Foremost Ins. Co. v. Richardson, 457 U.S. 668, 674-75 (1982) (“Although the primary focus of admiralty jurisdiction is unquestionably the protection of maritime commerce, petitioners take too narrow a view of the federal interest sought to be protected. The federal interest in protecting maritime commerce cannot be adequately served if admiralty jurisdiction is restricted to those individuals actually engaged in commercial maritime activity. This interest can be fully vindicated only if all operators of vessels on navigable waters are subject to uniform rules of conduct.”). Foremost goes on to cite 1 U.S.C. § 3, defining “vessel” as a “watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.” Id. at 676. Since net-pens are not capable of being used for transportation, they do not fit this definition.
51 S. 1609, 110th Cong. (2007).
52 U.S. Dep’t of Commerce & Nat’l Oceanic & Atmospheric Admin., supra note 16.
legal scholars have turned to the public trust doctrine as a possible governing legal principle for open ocean aquaculture. Suggesting that the public trust doctrine might be applicable to open ocean aquaculture raises a number of questions, including practical considerations regarding how the public trust doctrine might be asserted (and by whom), as well as legal questions about whether a federal public trust doctrine exists and if it is the same in its form and content as the state public trust doctrine. Before turning to the practical questions of implementation, an examination of the development of the public trust doctrine in the United States and some of the scholarship speculating about its possible applicability to open ocean aquaculture is necessary.

V. **Historical Development of the Public Trust Doctrine in the United States**

The public trust doctrine has come a long way from its origins in ancient Rome, both in the areas to which it is applied and in the use rights it conveys. While the doctrine derives from the idea that navigable waters are held by the sovereign in trust for the use of the people for purposes such as navigation and fishing, it now applies in some states to recreation, and in many states to non-navigable tidelands.

This section will first look at some of the seminal Supreme Court decisions that authorized the public trust doctrine’s application to the states. The section will then examine some state court decisions invoking the doctrine. It will then turn to the application of the public trust doctrine to the management of coastal fisheries before finally analyzing the doctrine’s application to open ocean aquaculture in state waters.

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53 Sax, *supra* note 4, at 475.
A. Supreme Court Cases Developing the Public Trust Doctrine

The American implementation of the public trust doctrine can be traced to the 1842 case of Martin v. Waddell’s Lessee, in which the Supreme Court held:

The dominion and property in navigable waters and the lands under them being held by the King as a public trust, the grant to an individual of an exclusive fishery in any portion of it is so much taken from the common fund entrusted to his care for the common benefit. In such cases, whatever does not pass by the grant remains in the Crown for the benefit and advantage of the whole community . . . .

The Waddell Court’s definition of the “whole community” was further refined in an 1876 ruling, McCready v. Virginia, in which the Supreme Court held that the Commonwealth of Virginia could deny public trust use of intrastate waters to non-citizens of that state. Sixteen years later, the Court further developed the American public trust doctrine in Illinois Central Railroad v. Illinois. The Illinois Central Court explained that “[t]he legislature could not give away nor sell the discretion of its successors in respect to matters, the government of which, from the very nature of things, must vary with varying circumstances,” but stopped short of delineating these matters. As a result, states have been free to develop variations in the scope and breadth of the doctrine.

57 See McCready v. State of Virginia, 94 U.S. 391, 396-97 (1876) (“And as all concede that a State may grant to one of its citizens the exclusive use of a part of the common property, the conclusion would seem to follow, that it might by appropriate legislation confine the use of the whole to its own people alone. . . . In this way the people of Virginia may be enabled to produce what the people of the other States cannot; but that is because they own property which the others do not. Their productions do not spring from commerce, but commerce to some extent from them.”).
B. State Court Decisions Invoking Public Trust Obligations

The variability among state constructions of public trust doctrine obligations is striking in that it suggests that the venerable doctrine has continued to evolve and adapt in response to the diverse values of the various states. This adaptability bodes well for potential application of the doctrine to open ocean aquaculture, although it also suggests that identifying a unified rule of law may be challenging. For the public trust doctrine to be applicable to open ocean aquaculture, it must be (1) geographically flexible enough to encompass expanding boundaries and (2) flexible with respect to the activities it protects, or, in other words, substantively flexible.

1. Geographic Flexibility of the Public Trust Doctrine

During the development of colonial states, areas that had been tidelands were filled in and built upon.\(^{59}\) Courts in some states, including Massachusetts, have decided not only to apply the public trust doctrine to coastal land that was once tideland, but also to landlocked former tidelands.\(^{60}\) As such, the American public trust doctrine has demonstrated sufficient geographic flexibility for a court to apply it to open ocean aquaculture, without breaking from precedent.

2. Substantive Flexibility of the Public Trust Doctrine

Just as New Jersey has expanded its public trust doctrine to encompass recreational beach use, California has broadened the substantive application of its public trust doctrine:

\(^{59}\) For example, Boston’s Back Bay neighborhood was once an actual bay. See Maps: Sites of Liberty, AM. EXPERIENCE: JOHN & ABIGAIL ADAMS, PBS (Aug. 26, 2005) http://www.pbs.org/wgbh/amex/adams/maps/maps_text_01.html.

\(^{60}\) See, e.g., Moot v. Dep’t of Envtl. Prot., 861 N.E.2d 410 (Mass. 2007) (invalidating a regulation that exempted landlocked former tidelands from public trust applicability).
Traditionally, public trust uses were limited to water-related commerce, navigation, and fishing. In more recent years, however, the California Supreme Court has said that the public trust embraces the right of the public to use the navigable waters of the state for bathing, swimming, boating, and general recreational purposes. It is sufficiently flexible to encompass changing public needs, such as the preservation of the lands in their natural state for scientific study, as open space and as wildlife habitat. The administrator of the public trust “is not burdened with an outmoded classification favoring one mode of utilization over another.”

Similarly, Massachusetts has expanded the application of its public trust doctrine to require that non-water-dependent uses of tidelands serve the public interest, delegating the determination of whether the public interest is served to the Massachusetts Department of Environmental Protection:

The obligation to preserve the public trust and to protect the public’s interest … has been delegated by the Legislature to the department, which, as charged in G.L. c. 91, § 2, “shall act to preserve and protect the rights in tidelands of the inhabitants of the commonwealth by ensuring that the tidelands are utilized only for water-dependent uses or otherwise serve a proper public purpose”.

By delegating the decision of whether a given use serves the public interest to the Department of Environmental Protection, Massachusetts has effectively expanded the subject-matter scope of its public trust doctrine to include a wide range of public benefits, including “exterior open spaces for active or passive public recreation, examples of which

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62 Moot, 861 N.E.2d at 413 (emphasis in original) (footnote omitted).
are parks, plazas, and observation areas” and interior areas of public accommodation.63

California has expanded the subject-matter scope of its public trust doctrine to encompass environmental impacts:

There is a growing public recognition that one of the most important public uses of the tidelands—a use encompassed within the tidelands trust—is the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area. It is not necessary to here define precisely all the public uses which encumber tidelands.64

C. Application of the Public Trust Doctrine to Fishery Management in State Waters

The public trust doctrine has demonstrated considerable geographical and subject-matter flexibility, but before determining the extent to which it is applicable to open ocean aquaculture in state waters, it is useful to examine the extent to which the doctrine has been applied to fishery management and to the fish themselves. The question here is not whether states have applied the public trust doctrine to fishery management, which they have,65 but rather what the legal basis has

63 310 Mass. Code Regs. 9.53 (2011). The Massachusetts Supreme Judicial Court opened the matter of which activities were consistent with the public trust on formerly flowed tidelands to legislative and regulatory action in Boston Waterfront Development Corp. v. Commonwealth, 393 N.E.2d 356, 367 (Mass. 1979) (“The essential import of this holding is that the land in question is not, like ordinary private land held in fee simple absolute, subject to development at the sole whim of the owner, but it is impressed with a public trust, which gives the public’s representatives an interest and responsibility in its development. This concept is difficult to describe in language in complete harmony with the language of the law ordinarily applied to privately owned property. We are not dealing with the allocation of property rights between private individuals when we are concerned with a public resource such as Boston Harbor.”).

64 Marks, 491 P.2d at 380.

65 Salcido, supra note 4, at 432 (“The Public Trust Doctrine has been used
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been for doing so. Does the public trust doctrine simply protect the right of citizens to use certain resources, or does it also extend to the preservation of those resources? For example, is it consistent with the public trust doctrine to close an area to fishing for the purpose of allowing fish populations to recover from overfishing?

Professor Hope M. Babcock lays the foundation for answering these questions in her article, Has the U.S. Supreme Court Finally Drained the Swamp of Takings Jurisprudence?: The Impact of Lucas v. South Carolina Coastal Council on Wetlands and Coastal Barrier Breaches, in which she observes, “[t]he public trust doctrine helps to harmonize the laws of nature and the law of property, bringing the expectations of landowners into harmony with the needs of nature by infusing an ecological perspective into property law.” Professor Gail Osherenko builds on this concept in her article, New Discourses on Ocean Governance: Understanding Property Rights and the Public Trust: “In the United States, the public trust doctrine has been applied widely to navigable waters, and tidal and submerged lands. Living resources within these waters and on these lands are also subject to the public trust.”

Therefore, environmental impacts that jeopardize these living resources are also subject to the public trust doctrine, under which “[t]he ocean, or more aptly, ocean ecosystems, must be protected so that they may continue to produce ecosystem services (food, medicine, climate stabilization, recreation, aesthetic enjoyment, as well as navigation and commerce).” Accordingly, when overfishing threatens ocean ecosystems, it logically follows that the public trust doctrine requires restricting or prohibiting fishing for a time period sufficient to allow the recovery of such “ecosystem services.” Under this reasoning, the public trust doctrine is available to states for the regulation and management of fisheries within their jurisdictional waters.

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68 Id. at 367.
Kevin J. Lynch further explores this question in his 2007 article, *Application of the Public Trust Doctrine to Modern Fishery Management Regimes*, in which he argues:

The public trust doctrine must create an affirmative duty on the state to protect and conserve public trust resources, otherwise simply providing access until the resources are destroyed would not meet the obligations on the government to protect public resources for use by the public. Thus, fishery managers have a duty to take action to prevent overfishing and protect fish populations.\(^{69}\)

Under this reasoning, the sovereign has not only a right but also a duty to apply the public trust doctrine to fishery management in waters over which it has jurisdiction because of the ecosystem impacts of overfishing. Since open ocean aquaculture also involves ecosystem impacts, it can be restricted under the public trust doctrine. But does the public trust doctrine allow open ocean aquaculture in state waters?

**D. Evaluating Whether the Public Trust Doctrine is Consistent with Allowing Open Ocean Aquaculture in State Waters**

If the public trust doctrine imposes a duty on states to limit the negative impacts of open ocean aquaculture on ecosystems, does it also allow such aquaculture where its impacts can be mitigated? Is it possible that, under certain circumstances, the public trust doctrine even requires states to permit open ocean aquaculture where prohibiting it would result in significantly reduced seafood production in state waters?

Professor Babcock explored the first of these questions in *Grotius, Ocean Fish Ranching, and the Public Trust Doctrine: Ride ‘Em Charlie Tuna*, in which she observes:

Ocean fish ranching could contravene the public trust doctrine in several ways. First, an ocean fish rancher encloses portions of the ocean with net pens for the

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purpose of commercially cultivating fish. In doing so, she essentially claims an exclusive right to use public resources (surface water, the water column, and the ocean bottom), thus monopolizing trust resources for private use. A second conversion of public trust resources could occur if ocean ranchers appropriate wild fish for their use as seed stock for farmed fish when those fish would otherwise be available for public fishing.\textsuperscript{70}

Professor Babcock goes on to acknowledge the counter-argument that open ocean aquaculture might be allowed under the public trust doctrine, “since ‘fishing’ is a long recognized use of public trust resources.”\textsuperscript{71} Thus, the Babcock analysis suggests that the public trust doctrine should be used either to prohibit or to restrict open ocean aquaculture, but not as a framework for allowing it.

In his 1997 article, *Ocean Aquaculture*, Professor Ronald J. Rychlak expresses a very different perspective on the applicability of the public trust doctrine to open ocean aquaculture: “By using the Public Trust Doctrine to encourage coastal aquaculture, it should be possible to obtain most of the benefits of private development without the restrictions that come with outright private ownership.”\textsuperscript{72}

In order to reconcile Professor Rychlak’s view that the public trust doctrine might be used to encourage open ocean aquaculture with Professor Babcock’s view that application of the public trust doctrine would be restrictive, it is helpful to examine the application of the doctrine to analogous fact patterns relating to the cultivation of seafood in public trust waters. In particular, the jurisprudence applying the public trust doctrine to the cultivation of oysters in tidelands is worthy of examination.

In an early public trust doctrine case, *Arnold v. Mundy*, the New Jersey Supreme Court held that the cultivation of oysters in public waters created no property right in the oysters: “It is said, that these oysters were planted by the plaintiff, and that he has a right to them though deposited


\textsuperscript{71} *Id.* (internal footnote omitted).

in a public river, and that they are different from running fish. But there is no such distinction.”

However, more recently, licenses for oyster cultivation in public trust waters have been granted. For example, Drakes Bay Oyster Company’s Special Use Permit for oyster cultivation in Point Reyes National Seashore is currently up for renewal.74 In this context, the public trust doctrine serves as a basis for denying the renewal of an oyster-bed permit, but not as an absolute bar to the issuance or renewal of such a permit. If issuance of licenses for oyster cultivation in public trust waters is allowed, then issuance of licenses for cultivation of fish in net-pens should also be permissible under the public trust doctrine.

This brings the discussion to the more challenging question of whether the public trust doctrine might, under certain circumstances, require the issuance of open ocean aquaculture permits. An examination of the hypothetical extremes may help to illuminate this question.

**Scenario #1: Abundant Wild Fish**—In the scenario described by William Cronon of abundant wild fish, it could be argued that any use of public trust waters that might jeopardize that abundance cannot be justified, since it could negatively impact the right of the public to fish by harming the ecosystem in those waters, without offering the public a countervailing benefit.75

**Scenario #2: Barren Waters**—At the other extreme are waters totally barren of fish. Under these circumstances, permitting open ocean aquaculture would be the only means by which a state could protect the right of its citizens to acquire fish from its public trust waters. In this extreme situation,76 a strong case can be made that allowing open ocean

### Notes

73 Arnold v. Mundy, 6 N.J.L. 1, 26 (1821). See generally Osherenko, supra note 67, at 344-45 (discussing private property rights to tidelands and the seeding of oyster beds).

74 Babcock, Grotius, supra note 70, at 52.

75 Of course, there would be no economic incentive to engage in open ocean aquaculture under these circumstances, but that observation is not relevant to the legal analysis.

76 While this situation is extreme, it is not theoretical. Ocean dead zones believed to be caused by agricultural run-off have been documented. The National Aeronautics and Space Administration has documented such areas. See Science Focus: Dead Zones – Creeping Dead Zones, Nat’l AERONAUTICS & SPACE ADMIN., http://disc.sci.gsfc.nasa.gov/oceancolor/additional/science-focus/ocean-color/science_focus.shtml/dead_zones.shtml (last visited Jan. 8, 2011).
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Aquaculture is mandated by the public trust doctrine.

The question then becomes at what point on the spectrum from abundance of wild fish to barren waters does the public trust doctrine require states to consider permitting open ocean aquaculture? This question can best be answered by applying the public trust doctrine to an application for an open ocean aquaculture permit and evaluating positive and negative effects of granting the permit on the interests protected by the doctrine, including the health of wild fish and the ecosystems in which they live, as well as the public’s interest in fish as a source of nutrition.

Establishing that states should apply the public trust doctrine in evaluating open ocean aquaculture permit applications in their state waters is of little practical value if most of the available locations for net-pens are in federal waters, unless the public trust doctrine can be applied to federal waters, especially given the aforementioned importance of protecting marine ecosystems. If open ocean aquaculture in federal waters causes pollution and diseases that harm fish and their ecosystems in state waters, then application of the public trust doctrine to open ocean aquaculture in state waters is an exercise in futility. Similarly, if no suitable locations for net-pens can be found in state waters and no permitting process is available for approval of net-pens in federal waters, then applying the public trust doctrine to open ocean aquaculture in state waters is a purely academic exercise.

It is therefore appropriate to turn to the question of whether the public trust doctrine is applicable in federal waters. There are two possible theories under which it might apply there: a federal public trust doctrine applicable to federal waters may exist or the public trust doctrines of states may be applicable in federal waters. These theories are the subjects of the next two sections.

VI. THE SEARCH FOR A FEDERAL PUBLIC TRUST DOCTRINE APPLICABLE TO FEDERAL WATERS

Professor Rachael E. Salcido summarizes the scholarship regarding whether there is a federal public trust doctrine applicable to federal waters77 in her 2010 article, Law Applicable on the Continental Shelf and

77 This awkward construction is necessary because the phrase “federal public trust doctrine” not modified by “applicable to federal waters” could be interpreted as a reference to the Illinois Central line of cases imposing duties on states.
in the Exclusive Economic Zone, in which she observes, “Some have argued the public trust doctrine applies in the EEZ . . . . Others have called for Congress and the courts to extend the doctrine formally to the outer continental shelf and EEZ.”78

A closer look at the scholarship arguing that there is an existing federal public trust doctrine applicable to federal waters reveals that there are two distinct threads to this discussion: some scholars assert that there is a federal public trust doctrine that has the force of law in federal waters, while others observe that the principles of the public trust doctrine are useful in resolving conflicts in federal waters.

In The Silver Anniversary of the United States’ Exclusive Economic Zone: Twenty-Five Years of Ocean Use and Abuse, and the Possibility of a Blue Water Public Trust Doctrine, the authors note that “the unresolved possibility of a public trust doctrine for federal ocean waters has not prevented national studies, the U.S. Commission on Ocean Policy, and federal agencies from using public trust language to describe the federal government’s duty to its citizens to steward resources in the EEZ.”79

Are public trust references by federal agencies indications that the agencies are drawing on the doctrine for binding authority? Or are these references merely arguments and factors that are helpful in exercising the agencies’ statutory authority, but that do not make the doctrine binding? The authors go on to answer this question: “We believe that a fundamental source of the public trust doctrine is the U.S. Constitution.”80 Citing Gibbons v. Ogden, they argue that the Court has found that the application of the Commerce Clause to navigable waters commands that the federal government exercise public trust duties in asserting control over federal waters.81 However, the plain language of United States v. Rands cited by the authors in support of this proposition suggests otherwise: “For this purpose [‘all of the navigable waters of the United States’] are the public property of the nation, and subject to all the requisite legislation by Congress.”82 In the context of Gibbons, which struck down a state law granting exclusive use of state waters for steamships to two individuals,

78 Salcido, supra note 4, at 432.
79 Turnipseed et al., supra note 11, at 25.
80 Id. at 42.
81 Id. at 43 (citing Gibbons v. Ogden, 22 U.S. 1 (1824)).
82 Id. (citing United States v. Rands, 389 U.S. 121, 122-23 (1967) (citation omitted)).
the Court asserted that the Commerce Clause gives Congress the power to regulate navigation, thereby limiting the power of the states in this area. As such, *Gibbons* does not restrict the power of Congress to enact legislation governing federal waters based on public trust duties.

Kevin J. Lynch is blunter in his assessment of whether a federal public trust doctrine applicable to federal waters exists:

> While there is an abundance of authority on the public trust doctrine as a matter of state law, similar authority on the existence of a federal public trust is noticeably lacking. A few important cases hint at the existence of a federal public trust doctrine, although no courts have addressed the issue of a public trust covering federal fisheries. The existing caselaw has applied the public trust doctrine to the federal government in only two circumstances. First, several cases imply that a federal public trust doctrine exists for lands and waters that could one day be subject to state control under a public trust because the federal government holds those lands in trust for the states. Second, courts have discussed the effect of the federal government acquiring through condemnation lands that had been subject to a public trust. In these circumstances, there is a division of authority on whether the U.S. is bound by the public trust doctrine or whether the use of eminent domain extinguishes the public trust.

The pattern among articles asserting applicability of a federal public trust doctrine to federal waters is that the authors of those articles believe that such applicability is desirable from a policy perspective. In *Grotius*, Professor Babcock cites a number of policy advantages of applying the doctrine to federal waters, concluding that:

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83 *Gibbons v. Ogden*, 22 U.S. 1, 30 (1824) (“the concurrent power of the States, concurrent though it be, is yet subordinate to the legislation of Congress”).

84 Lynch, *supra* note 69, at 295 (internal footnotes omitted).
While the thrust of the public trust doctrine suggests that it might be used to protect the natural resources of the EEZ until a coherent regulatory regime develops, it has been unclear whether the doctrine applies so far from shore. This Article suggests that it can apply, either based on the existence of a federal public trust doctrine or on the expansion of state common law to the EEZ.85

If a strong case cannot be made that the Constitution requires the federal courts to apply public trust doctrine use and access protections to federal waters, has Congress enacted laws that impose these public trust duties on the federal government? This issue is discussed in Professor Kristen M. Fletcher’s 2006 article, Regional Ocean Governance: The Role of the Public Trust Doctrine, in which she observes that a statutory basis for the public trust doctrine may be found in the legislation establishing the National Wildlife Refuge System,86 but this observation appears to have, at best, indirect applicability to federal waters.

The case for a federal public trust doctrine applicable to federal waters appears to rest on creative interpretation of Supreme Court precedent and policy judgments of various authors, rather than on a solid foundation in jurisprudence. The search for a public trust doctrine with binding force in federal waters therefore must turn to the question of whether various state public trust doctrines are applicable to federal waters.

VII. Can State Public Trust Doctrines Reach Federal Waters?

There are a number of possible legal theories under which the various state public trust doctrines may be applicable to federal waters. For the sake of clarity, this discussion will categorize those theories into five groups, as follows: extraterritoriality, state delegation of powers to the federal government under American federalism, the use of persuasive precedent to fill gaps in the law, potential joint ownership of federal waters by the states, and application of international law to federal waters.

85 Babcock, Grotius, supra note 70, at 76.
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A. Extraterritoriality

The simplest theory under which state public trust doctrines may be applied to federal waters is the extraterritorial application of state law beyond the borders of the state. In Grotius, Professor Babcock raises this possibility as a stopgap measure for regulating open ocean aquaculture while waiting for congressional action. Babcock argues that historical state participation in regulating fisheries and the role granted to states by the Coastal Zone Management Act (“CZMA”) serve to show state presence in federal waters sufficient for states to assert extraterritorial jurisdiction in those waters.87 Specifically, Professor Babcock argues that the CZMA’s process for developing Coastal Zone Management Plans (“CZMPs”) includes the opportunity for state input, possibly including application of state public trust doctrines:

To the extent that coastal states have explicitly or implicitly incorporated public trust principles into their CZMPs, and fish ranching activities will affect individual states’ coastal zones, then these principles will extend to applications by ocean fish ranchers for federal authorization to conduct their activities in the EEZ.88

An important characteristic of Professor Babcock’s extraterritoriality formulation is that it is limited to “applications by ocean fish ranchers for federal authorization” and, therefore, would be available to limit or to prohibit open ocean aquaculture in federal waters, but not to serve as an independent basis for permitting it. In other words, Babcock’s extraterritoriality formulation would apply a state’s public trust doctrine only to restrict, not authorize, federal activities in federal waters.

In a recent article, Professor Stephanie Showalter applies Babcock’s formulation to a pending application for an open ocean aquaculture project to be located in federal waters five miles off the coast of California.89

87 Babcock, Grotius, supra note 70, at 65.
88 Id.
Professor Showalter further develops Babcock’s formulation by relying upon *Skiriotes v. Florida*, a pre-EEZ case in which the Supreme Court held that state law can have extraterritorial effect in federal waters:

If the United States may control the conduct of its citizens upon the high seas, we see no reason why the State of Florida may not likewise govern the conduct of its citizens upon the high seas with respect to matters in which the State has a legitimate interest and where there is no conflict with acts of Congress.90

Professor Showalter goes on to cite an Alaska Supreme Court case in which the definition of “citizens” from *Skiriotes* is expanded to encompass “all Americans.”91 Based on these precedents, she concludes that state law, if not preempted by federal law or regulation, can be applicable to federal waters.92 While Professor Showalter acknowledges that extraterritorial application of state law in federal waters is preempted to a great extent by the Magnuson-Stevens Act,93 she distinguishes that preemption as applying only to species identified in the relevant Fishery Management Plan (“FMP”)94 and only when the vessel conducting the fishing or aquaculture is registered in that state.95

This description of federal preemption under the Magnuson-Stevens Act appears to rely on precedents from before the 1996 reauthorization of the Act,96 at which time the section on state jurisdiction in federal waters was significantly amended, modifying the applicability of state law in federal waters.97

90 *Skiriotes v. Florida*, 313 U.S. 69, 77 (1941).
92 *Id.* at 237.
93 *Id.* at 232.
94 *Id.* at 233.
95 *Id.*
97 The section of the Magnuson-Stevens Act that previously read, “Except as otherwise provided by paragraph (2), a State may not directly or indirectly regulate any fishing vessel outside its boundaries, unless the vessel is registered
Under the current version of the Magnuson-Stevens Act, state law appears to apply even when a vessel is not registered to the state in question when “[t]he fishery management plan for the fishery in which the fishing vessel is operating delegates management of the fishery to a State and the State’s laws and regulations are consistent with such fishery management plan.”

However, even under this slightly broader application of Babcock’s extraterritoriality formulation, the applicability of state law to federal waters rests on fishery management laws and regulations. It is worth considering whether there is a broader formulation of extraterritorial application of state law to federal waters.

A broader extraterritoriality rule of law appears to be at work in California law governing ballast water discharge, which restricts the dumping of ballast waters within 200 nautical miles of shore (that is to say, within state and federal waters) for ships travelling from outside the Pacific coast region. While the California ballast-exchange law is not contradicted by federal law, neither is it explicitly authorized by federal law. As such, it appears to be a pure example of extraterritorial application of state law to federal waters, justified on the basis of California’s strong interest in protecting its waters from invasive species that can disrupt native ecosystems and cause illness. However, it is premature to conclude that the California ballast-exchange law represents a legitimate extraterritorial


100 Andrew N. Cohen & Brent Foster, The Regulation of Biological Pollution: Preventing Exotic Species Invasions from Ballast Water Discharged into California Coastal Waters, 30 Golden Gate U.L. Rev. 787, 822-27 (2000).

101 Id. at 790-801.
application of state law, as it has yet to be challenged in court.\footnote{A Shepard's report on Cal. Pub. Res. Code sec. 71200 conducted March 30, 2011 identified three citing statutes, six citing law reviews and periodicals, and one citing treatise, but no citing cases.}

The extraterritorial application of state law to protect in-state ecosystems from out-of-state harms appears to be a good match for application of a state public trust doctrine to federal waters. In fact, at least one court has asserted extraterritorial applicability of a state public trust doctrine in federal waters. In \textit{Alliance to Protect Nantucket Sound}, the Supreme Judicial Court of Massachusetts considered the application of the public trust doctrine to a proposed wind farm, holding that the in-state impacts of power transmission lines located in federal waters were subject to the Massachusetts public trust doctrine:

\begin{quote}
We emphasize that the siting board properly could, and did, consider the in-State impacts of the entire length of Cape Wind’s transmission lines even though the lines will lie in part in Federal waters because those impacts relate \textit{directly} to the “facility” over which the siting board has jurisdiction. In doing so, the siting board met its public trust obligations arising from the fact that the facility under review is located in Commonwealth tidelands.\footnote{\textit{Alliance to Protect Nantucket Sound} v. Energy Facilities Siting Bd., 932 N.E.2d 787, 805 (Mass. 2010) (emphasis in original).}
\end{quote}

While the majority in \textit{Alliance to Protect Nantucket Sound} put its foot in the door of extraterritorial application of the Massachusetts public trust doctrine to federal waters, Chief Justice Marshall, in dissent, was willing to go much further:

\begin{quote}
The court also concludes that the siting board acted appropriately by granting the certificate without considering \textit{any} of the in-State impacts of the wind farm. Centuries of legislation and jurisprudence concerning the paramount rights of the people of the Commonwealth to the use of the sea and shore lead me to disagree. The stakes are high. As we have recently seen in the Gulf of Mexico, the failure to take into account in-State
\end{quote}
consequences of federally authorized energy projects in Federal waters can have catastrophic effects on State tidelands and coastal areas, and on all who depend on them.

The public trust doctrine stands as a covenant between the people of the Commonwealth and their government, a covenant to safeguard our tidelands for all generations for the use of the people, traditionally for fishing, fowling, and navigation. The doctrine, and with it the public’s trust in government, once undermined is not easily restored. The court’s judgment, I fear, is a step in the wrong direction.\textsuperscript{104}

Despite Chief Justice Marshall’s admonition, the majority did specifically assert application of the Massachusetts public trust doctrine to federal waters. That she and Associate Justice Francis X. Spina, who joined her dissent, were willing to apply public trust doctrine extraterritorially over the wind turbines themselves, and not just the power lines, is more a matter of degree than direction. Both opinions suggest that at least the Massachusetts public trust doctrine has extraterritorial application to adjoining federal waters and might, therefore, be applicable to open ocean aquaculture located there, even when such aquaculture is not being served by vessels registered to the Commonwealth of Massachusetts or consistent with a fishery management plan.

The principle of extraterritoriality therefore offers an intriguing possibility for application of state public trust doctrines to federal waters, but what are the limitations of this authority? Is it subject to preemption by federal law, or does the Constitution shield states from this kind of federal interference?

\textsuperscript{104} Id. at 816 (emphasis in original) (citations omitted).
B. Whether States Have Delegated Their Public Trust Duties and Powers to the Federal Government

The complex history of jurisdiction in America’s coastal waters masks a fundamental question of federalism: under what circumstances does the Constitution authorize exclusive federal jurisdiction over an area that is neither part of a state nor a federal territory? If the fundamental principle of American federalism is that all powers of the federal government must be granted to it by the states, did the states delegate their public trust doctrine powers and duties to the federal government when they ratified the Constitution?

This question presupposes that the public trust doctrine conferred powers upon the states at the time the Constitution was ratified, a contention challenged by Professor James Huffman in Speaking of Inconvenient Truths – A History of the Public Trust Doctrine, in which he argues that the modern conception of the public trust doctrine is “mythological” and has been based on inaccurate portrayals of Roman law, English Common Law, and early American jurisprudence. This critique prompted a response from Professor Babcock, The Public Trust Doctrine: What a Tall Tale They Tell, in which she acknowledges that some of the underpinnings of the modern public trust doctrine are “legal fiction,” but argues that legal fictions are a valid part of an evolving body of law and that “the constant repetition of the mythological origins of the public trust doctrine . . . is little more than a court using the doctrine to legitimize public expectations about the public nature of certain resources to which people feel entitled.”

While Professor Babcock makes a strong case that the history of the public trust doctrine is irrelevant to its current validity, the extent to which the doctrine existed at the time of Constitutional ratification is relevant to the question at hand. The possibility that states could

105 See generally U.S. Const. amend. X (“The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”).
106 Huffman, supra note 4, at 9.
hold powers retroactively discovered two centuries after ratification is intrigu ing, as is the question as to whether those retroactively discovered powers might similarly have been retroactively delegated to the federal government, but these possibilities are beyond the scope of the present inquiry.

One further question regarding the delegation of power from states to the federal government remains to be explored: whether the boundaries of a state are fixed or whether a change in international law that allows expansion of national borders might have the effect of expanding state borders. In other words, did the Framers contemplate that expansion of the United States would be accomplished only by increasing the size and number of states and territories, or did they envision federal assertion of exclusive jurisdiction over new areas incorporated into the nation? Article I, Section 8 of the Constitution offers a window into this thought process:

To exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-Yards, and other needful Buildings.108

If the Framers saw fit to specify that Congress has exclusive power over the federal district, can it reasonably be inferred that Congress (and the federal government) would not have exclusive power over areas of the nation? When international law allowed the expansion of national territorial seas from three nautical miles to twelve, would the Framers have added these areas to coastal states rather than creating a new category of federal control in which to place them? And would the same logic have applied to the creation of the EEZ? The Supreme Court's decision in United States v. California settled these questions with respect to the lands under the territorial sea by holding that even the three-mile strip of seabed along the California shore was held by the federal government

108 U.S. Const. art. 1, § 8, cl. 17.
unless and until Congress granted it to the state, but the Court has yet to rule as to the ownership of the waters themselves and whether they are associated with a given state or part of a federal district, which—including EEZ waters—would be greater in area than all of the lands of the United States combined.

It is therefore possible that the Supreme Court might find states to have power over EEZ waters, but doing so would signal a change in direction from decisions in which the powers of the federal government have been upheld against the interests of the states. A related but less radical approach that might also result in the application of state public trust doctrines to federal waters would be to treat state public trust doctrine precedents as persuasive law available to fill in gaps in federal law or to develop federal common law.

C. The Use of State Public Trust Doctrines as Persuasive Precedent to Fill Gaps in Federal Law and to Develop Federal Common Law

The history of common law in the United States raises the possibility that state common law might be applicable in federal courts, at least for purposes of developing federal common law. Prior to the Court’s 1938 decision in *Erie Railroad Co. v. Tompkins*, Swift v. Tyson’s holding that there was just one body of common law applicable in both state and federal courts was the law of the land, including in 1892 when

109 Congress did so in passing the Submerged Lands Act of 1953, 43 U.S.C. §§ 1301-1315 (1953), which granted the three-mile strip of coastal land back to the states.

110 According to the Preliminary Report of the U.S. Commission on Ocean Policy of April 2004, “[t]he U.S. exclusive economic zone (EEZ) extends 200 nautical miles offshore, encompassing diverse ecosystems and vast natural resources, such as fisheries and energy and other mineral resources. The U.S. EEZ is the largest in the world, spanning over 13,000 miles of coastline and containing 3.4 million square nautical miles of ocean, which is larger than the combined land area of the fifty states. (A square nautical mile is equal to 1.3 square miles.)” U.S. COMM’N ON OCEAN POLICY, PRELIMINARY REPORT: GOVERNOR’S DRAFT (2004), oceancommission.gov/documents/prelimreport/intro_matter.pdf.

111 *Erie R.R. Co. v. Tompkins*, 304 U.S. 64 (1938) (overturning Swift v. Tyson, 41 U.S. 1 (1842)).

112 Swift v. Tyson, 41 U.S. 1, 1 (1842).
Illinois Central Railroad v. Illinois was decided. The public trust doctrine fits nicely into Swift’s view that courts discover the common law, but do not create it. If the Illinois Central Court was discovering a doctrine of common law whose details were subsequently discovered by state courts, might those state court decisions not have some weight in areas of federal jurisdiction, at least as persuasive precedents?

Professor Babcock identifies the lack of a legal framework to govern open ocean aquaculture as a “regulatory gap.” In The Property Rights Challenge in Marine Fisheries, Professor Katrina Wyman succinctly describes this gap in the law: “There is currently no regime governing aquaculture in federal waters.” One of the functions of common law is to fill such gaps, and when no binding precedents are available, courts may turn to persuasive precedents. Even in a post-Erie world in which multiple public trust doctrines can coexist in American jurisprudence, it is reasonable to encourage courts to examine precedents from other jurisdictions when no directly applicable precedents present themselves.

Professor Fletcher observes that application of the public trust doctrine is grounded not in who manages a resource, but in the nature of the resource itself. Since the distinction between state and federal waters is arbitrary and the nature of the fish and ecosystems that are found in both cannot be distinguished on the basis of jurisdiction, whatever articulation of the public trust doctrine best serves the protection and continued availability of those resources should be applied, regardless of the jurisdiction in which those waters are located.

Therefore, a strong case can be made that the public trust doctrine, despite its recent divergence in the courts of various states and the federal government, is available as a cohesive rule of law to courts which seek to avail themselves of it, including possibly the Supreme Court.

D. The Possibility of Joint Federal and State Jurisdiction or Ownership Over Federal Waters

It is also worth inquiring whether it is possible, based on the array of precedents relating to applicability of state and federal laws to U.S.
coastal waters, including EEZ waters, that jurisdiction over those waters is jointly held by the state and federal governments, depending upon the resource or use in question. In other words, just as it is possible for one person to own the mineral rights to a piece of land and another to own the surface rights, might it not also be possible for the federal government to have jurisdiction over the lands underneath EEZ waters and over “all \[c\]ases of admiralty and maritime \[j\]urisdiction,”\textsuperscript{116} but for states to have jurisdiction over ecosystems and fish within the water column?

Given the overlapping federal and state interests in the three-mile strip abutting state coastlines, it would not be unreasonable to characterize this area of ocean as being subject to joint state and federal jurisdiction. While Congress\textsuperscript{117} and the Supreme Court\textsuperscript{118} have divided the rights to the land under coastal waters between the state and federal governments, it is far less clear whether differing rules of law apply to the water columns above those lands. Simply referring to the entire 200-mile EEZ as being held in joint state and federal jurisdiction might focus discussion on the bundles of rights and responsibilities over which each level of government has jurisdiction, rather than the current nomenclature, which applies rules and exceptions.\textsuperscript{119}

Under a joint jurisdiction model, it would be possible to develop a regulatory regime for open ocean aquaculture that is applicable in both state and federal waters and which simplifies the application process allowing for appropriate state and federal authorizations, while protecting ecosystems that cross artificial jurisdictional boundaries.

\textbf{E. Application of International Law to Federal Waters}

Up to this point, this discussion has focused on the mechanisms within U.S. law that might allow the public trust doctrine, as developed and articulated by state courts, to apply to federal waters, but it is worth noting that artificial jurisdictional boundaries are not only internal to the United States, but also apply on an international scale. There is at least one legal theory under which international law might be found to support

\textsuperscript{116} U.S. Const. art. III, § 2.
\textsuperscript{118} United States v. California, 332 U.S. 19 (1947).
\textsuperscript{119} And exceptions to the exceptions, such as in the Magnuson-Stevens Act, 16 U.S.C. § 1856(b) (2011).
the application of state public trust doctrines to open ocean aquaculture in federal waters.

In *World Ocean Public Trust: High Seas Fisheries After Grotius—Towards a New Ocean Ethos?*, Montserrat Gorina-Ysern discusses fishery management and aquaculture under international law.120 The article examines the obligations placed on member countries under the United Nations Convention on the Law of the Sea ("UNCLOS"), which authorizes the creation of national EEZs.121 While not an official party to UNCLOS, the United States has asserted rights under the agreement, and it is U.S. policy to comply with its requirements.122 *World Ocean Public Trust* describes the obligations of UNCLOS parties: "[T]he 1982 UNCLOS requires States to ensure that EEZ living resources are not endangered by overexploitation. States must cooperate with other States engaged in the capture of straddling stocks, highly migratory stocks, anadromous species, and marine mammals."123

These responsibilities are very similar to those imposed on states by the public trust doctrine. It could therefore be argued that application of state public trust doctrines to federal waters might help the United States to meet its international obligations under UNCLOS.

The implementation of one or more of these theories for applying state public trust doctrines to federal waters would raise a number of practical considerations, as examined in the next section.

122 President Reagan established the U.S. EEZ in 1983 based on the rights conferred upon parties to the Convention and instructed federal agencies to comply with the treaty, except for the section on seabed mining, to which the United States had objections until the 1994 revision of UNCLOS. It is possible that the United States might now ratify the treaty. Even barring ratification, having asserted rights under the treaty, the United States may have constructively accepted its obligations. See *The United States and the Law of the Sea*, Citizens for Global Solutions, http://globalsolutions.org/files/public/documents/LOS_Factsheet.pdf (last visited Jan. 1, 2012).
VIII. PRACTICAL CONSIDERATIONS IN APPLYING THE PUBLIC TRUST DOCTRINE TO FEDERAL WATERS

Among the advantages of applying a state public trust doctrine to open ocean aquaculture in federal waters, rather than relying on the development of a federal public trust doctrine for the governance of open ocean aquaculture in federal waters, are the practical considerations. Finding an applicable public trust doctrine may not be so difficult as persuading relevant policymakers to implement it. Not including states that border the Great Lakes, the United States has 23 coastal states,¹²⁴ any one of which could attempt to assert its public trust doctrine in federal waters. A state in which policymakers sought to improve economic development, to increase the food supply, and to protect the ecosystems of its coastal waters might be fertile ground for such an effort.

In fact, all that would be required for state regulators to assert public trust doctrine-based authority over open ocean aquaculture in federal waters would be to treat such applications in the same manner they currently consider applications for aquaculture in state waters, which already require approvals from both the Environmental Protection Agency (“EPA”) with respect to discharges and the Army Corps of Engineers with respect to navigation.¹²⁵ Alternatively, a state permitting authority wishing to assert public trust doctrine authority over open ocean aquaculture in federal waters could modify applications for open ocean aquaculture in state waters to relocate some or all of the requested net-pens to federal waters, subject to appropriate federal approvals, in cases where doing so would minimize negative impacts on ecosystems and serve other public trust purposes.

Of course, it is also possible that by examining open ocean aquaculture applications through a public trust doctrine lens, state authorities may conclude that the potential harms of the project in question outweigh its benefits, regardless of whether it is located in state or federal waters. State authorities would need to work with the EPA

¹²⁵ See Babcock, Grotius, supra note 70, at 27-29.
to develop guidelines that protect ecosystems and wild fish populations in both state and federal waters from invasive species, spread of disease, and other possible impacts of open ocean aquaculture. In this manner, assertion of the public trust doctrine could help to build a simplified system of review that protects both the public’s interest in seafood production and its interest in ecosystem preservation.

Before concluding that such an assertion of public trust doctrine authority over open ocean aquaculture is prudent, it is appropriate to consider the practical implications of such an initiative for the other policies and regulatory regimes that are currently operating and under consideration in coastal waters. These policies and regulatory regimes include: Area-Wide Management, Ocean Zoning, LAPPs and Similar Private-Property Regimes, Clean Water Act Enforcement, Marine Protected Areas, and Regional Ocean Governance (“ROG”).

A. Area-Wide Management

In The Use of the Public Trust Doctrine for Resource-Based Area-Wide Management: What Lessons Can We Learn from the Navigable Waters Trust?, Professor M. Casey Jarman discusses the use of area-wide management as a technique for preserving scarce resources:

Proponents of area-wide management have available to them a body of knowledge that was in its infancy when policymakers were initiating the federal government’s “green revolution.” Rise of the science of ecology has provided us with “objectively credible” evidence of the complex interrelationships among the various components of an ecosystem and between and among ecosystems themselves.126

Are these techniques consistent with application of the public trust doctrine? Professor Jarman answers this question in the affirmative:

I urge those interested in developing an effective area-wide management program to take a thoughtful look at the public trust doctrine. It is based in protection of the underlying res, the public trust resources themselves. The public trust doctrine has also proven to be very flexible by accommodating changing conditions of the world today.127

B. Ocean Zoning

Some scholars have suggested creating and enforcing a zoning map of coastal waters that groups like uses and balances interests of use and conservation. In The Feasibility of Using Zoning to Reduce Conflicts in the Exclusive Economic Zone, Kelly McGrath presents the case for ocean zoning of the EEZ:

With increasing demands for resources such as fish, shellfish, minerals, sand for beach restoration, oil and gas (as well as dramatic increases in recreational fishing, boating, and diving) a comprehensive ocean management plan is needed. Divers cannot compete for space with commercial fishing boats. Oil platforms cannot be next to sensitive reef habitats. Mineral mining cannot be in an Essential Fish Habitat. There is no national system to regulate and organize these ocean uses. Although each of these uses [is] regulated by different government agencies, each use is regulated in isolation. It is important to coordinate these uses not only to avoid conflicts, but to protect the ocean and its resources now and for future generations.128

McGrath later refers to the public trust doctrine as one possible authority under which ocean zoning might be possible.129

127 Id. at 15.
129 Id. at 189.
C. LAPPs and Similar Private-Property Regimes

While environmentalists have argued that the decline in fisheries has resulted from inadequate environmental regulation and have advocated such solutions as area-wide management and ocean zoning, privatization advocates have argued that the best way to prevent the tragedy of the commons is to grant individuals some property rights in commonly-held resources, such as fisheries. One such model, known as Limited Access Privileges Programs (LAPPs), is authorized by the Magnuson-Stevens Act. Kevin Lynch summarizes the use of LAPPs as follows:

Today, the most commonly used LAPPs include catch shares such as Individual Fishing Quotas (IFQs) (as they are known in the U.S.) and Individual Transferable Quotas (ITQs) (as they are known in places like New Zealand, Australia, Canada, and Iceland). ITQs give holders the right to catch a share of the Total Allowable Catch (TAC), usually expressed as a percentage. IFQs are essentially the same as ITQs though they need not be transferable. Other LAPPs allocating a share of the total catch to individuals or groups include Individual Vessel Quotas (IVQs), Individual Processor Quotas (IPQs), and Community Development Quotas (CDQs). These catch shares all give the holder rights of access and withdrawal, but typically the government retains the rights of management, exclusion, and alienation. Even when the LAPP is transferable the government retains the authority to regulate or condition its transfer.130

Are these vehicles for granting private property rights in fisheries consistent with the public trust doctrine? Kevin Lynch argues that they are:

130 Lynch, supra note 69, at 304 (internal footnotes omitted).
Opponents of LAPPs often seize on the public right of fishing by pointing out that LAPPs create exclusive harvest rights in individuals or groups that prevent open access by the public. This view of the public trust doctrine is excessively narrow for two reasons. First, the argument mischaracterizes the statement of the doctrine in early leading cases; the public trust doctrine does allow for the alienation of public trust tidelands in certain situations. However, most LAPPs simply give individuals rights to catch a specified amount of fish or to fish in a given area, and they do not give private individuals rights to interfere with public access. Public access to the fishery can properly be limited by government managers because under the public trust doctrine, public rights of access are not absolute; they simply must be protected from interference by private parties.131

D. Clean Water Act Enforcement

Another potential objection to applying the public trust doctrine to open ocean aquaculture would be that doing so would conflict with efforts by the EPA to enforce the Clean Water Act. If current enforcement of the Clean Water Act were effective at protecting ocean ecosystems, then would application of the public trust doctrine offer further protection, or would it simply complicate and obstruct existing enforcement efforts?

Answering this question requires examining current EPA efforts to enforce the Clean Water Act in coastal waters. Jansen Anderman-Hahn addresses this question in Net Pens with Adaptive Management: How to Manage the Expansion of Aquaculture Using the Clean Water Act: “The EPA’s national aquaculture management policy is inadequate and inconsistent with both the CWA and the parameters of the Acadia Aquaculture Permit.”132

Anderman-Hahn goes on to observe that under current enforcement practices, there are “no warning thresholds, water-quality-

131 Id. at 307-08 (internal footnotes omitted).
based pollution indicators, or other measurable impact standards . . . established that would allow for enforcement of pollutants from permitted facilities,” recommending that such measurable standards be applied to open ocean aquaculture. In other words, the public trust doctrine could actually be an impetus for developing such standards.

**E. Marine Protected Areas**

In their 2004 article, *Putting “Protection” into Marine Protected Areas*, Donald C. Baur, W. Robert Irvin and Darren R. Misenko argue that current law is inadequate to protect Marine Protected Areas authorized by President Clinton’s Executive Order 13,158 in 2000. The authors indicate that the public trust doctrine might be helpful in protecting these areas, but “[s]uch actions require plaintiffs to establish compelling fact situations and carry out aggressive, costly, and often times difficult litigation strategies. As a result, common law legal strategies are of limited value in extending protection to MPAs.” From this account, it is not clear whether application of the public trust doctrine to open ocean aquaculture would be helpful to the protection of Marine Protected Areas, but the two do not appear to be in conflict.

**F. Regional Ocean Governance (“ROG”)**

Professor Fletcher’s 2004 article *Regional Ocean Governance* touts the approach as “a tool to better manage ocean and coastal resources and move toward ecosystem-based management of the oceans and coasts.” She goes on to argue:

In considering ROG, the role of the PTD [public trust doctrine] is often overlooked. Indeed, the Doctrine itself may be overlooked as a tool for transboundary resource management. With its historic and current role in marine resource management, its codification into state law, and

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133 *Id.* at 1031-33.
135 *Id.* at 542.
its flexibility in implementation, the PTD can act as a vehicle to advance ROG rather than as a hindrance. Even though it is applied differently from state to state, the fundamental elements of the Doctrine can tie the efforts of each state together.\textsuperscript{137}

As such, application of the public trust doctrine to open ocean aquaculture appears to be consistent with some of the other tools for ocean resource management currently in use or under consideration.

\section*{IX. Conclusion}

The application of the public trust doctrine to open ocean aquaculture would be helpful not only for establishing a legal framework for expansion of the technology beyond state waters—with the possible result of significantly increased seafood production—but also for mitigating potential harm to ecosystems and wild fish populations that might result from expansion of open ocean aquaculture to federal waters under a different legal regime. In addition, the public trust doctrine has the flexibility to operate harmoniously with a wide range of practices currently in use or under consideration for managing ocean resources.

The distinguishing characteristic that makes the public trust doctrine so useful is that it is not so much concerned with preventing activities or allowing them, as it is with balancing interests. In this respect, it is a more resilient rule of law than most statutes and regulations, and yet it offers a predictable and stable environment in which commercial interests might fare better than they have under existing laws governing aquaculture in EEZ waters.

That the public trust doctrine is well suited for governing open ocean aquaculture is not a new idea. Legal scholars have observed the important role the public trust doctrine has played in the management of state waters and asked whether there exists a federal public trust doctrine that might be applied to federal waters. This quest has largely been in vain, since the federal public trust doctrine, as defined by the Supreme Court, is subsumed into the duties of Congress. If Congress fails to act in a given area, the Court does not seem inclined to apply substantive federal

\textsuperscript{137} Id. at 199.
common law based on the public trust doctrine.

This inquiry raises the possibility that asking whether there is a federal public trust doctrine applicable to open ocean aquaculture in federal waters may be the wrong question. For such a federal public trust doctrine to be necessary, it must be assumed that the public trust duties and powers of coastal states are extinguished at an arbitrary line based on the limits of state jurisdiction over submerged lands. But an exploration of this assumption has shown that there exist several strong arguments why state public trust doctrines might be applicable in federal waters. The strongest of these arguments are the extraterritorial application of state law in federal waters and the lack of delegation of state public trust powers to the federal government.

Application of state public trust doctrines to open ocean aquaculture in federal waters appears to be compatible with some of the other management tools and legal principles that have been suggested as being useful to the governance of aquaculture in U.S. coastal waters. The alternatives are twofold: (1) lack of a legal framework for open ocean aquaculture in federal waters, which could severely limit the development of this new technology and limit its ability to increase seafood production; or (2) approval of open ocean aquaculture projects in federal waters without adequate environmental safeguards, which could jeopardize ecosystems and fisheries.

Testing the limits of the ability of state public trust doctrines to apply to open ocean aquaculture would not prove difficult for a willing coastal state aquaculture permitting authority, which could approve such a permit using the existing state process and with the same required federal approvals that are applicable in state waters. Such a permit would be valid, subject to court challenge to the application of the state public trust doctrine to federal waters.

Extraterritorial application of state public trust doctrines to open ocean aquaculture appears to be a viable option to protect U.S. coastal waters as a sustainable source of nourishment, consistent with the values and objectives of early American colonists and the Framers of the Constitution alike.

CALIFORNIA’S CONTINUED STRUGGLE AGAINST NONAMBULATORY ANIMAL SLAUGHTER AND THE LIMITS OF FEDERAL PREEMPTION: NATIONAL MEAT ASSOCIATION V. BROWN

Shelley Barron*

“California’s prohibition of the slaughter of nonambulatory animals does not duplicate federal procedures; it withdraws from slaughter animals that are unable to walk to their death.”1

INTRODUCTION

Shortly after the largest beef recall in U.S. history—prompted by a Humane Society video exposé of “downer” cows at the Westland/Hallmark slaughterhouse—California amended Section 599f of its penal code to ban the sale, receipt, slaughter, and inhumane treatment of nonambulatory animals.2 “Downer” or nonambulatory animals are physically incapable of standing or walking without assistance, due to either injury or disease.3 The commercial distribution of meat from nonambulatory animals presents significant health concerns to the

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1 Nat’l Meat Ass’n v. Brown, 599 F.3d 1093, 1099 (9th Cir. 2010).


3 Nat’l Meat Ass’n, 599 F.3d at 1096.
consuming public and raises ethical issues surrounding the treatment of ill or disabled livestock.4

Before the amended Section 599f was to take effect, the National Meat Association (NMA), a trade association representing “packers and processors of swine livestock and pork products,” filed suit in federal court in the Eastern District of California seeking “declaratory judgment and injunctive relief barring application of section 599f to federally inspected swine slaughterhouses.”5 On February 19, 2009, the district court found that Section 599f was preempted by federal law and entered a preliminary injunction.6 The State of California and defendant-interveners who supported the amended Section 599f, including the Humane Society, brought an interlocutory appeal challenging the district court’s finding of preemption.7 Fundamentally, the NMA’s challenge urged the courts to consider the balance of power between the federal government and state administrators, as well as the tensions between the economic and commercial needs of a nationally regulated meat program and California’s state interest in protecting public health through local food policy standards.

The Ninth Circuit Court of Appeals, in a decision by Chief Judge Kozinski, vacated the district court’s decision to grant the preliminary injunction. Narrowly reading the limits of federal preemption and showing strong deference to California’s state interest in promoting public health and animal welfare, the Ninth Circuit determined that California’s likelihood of success on the merits of the declaratory judgment claim was high, and that the NMA’s showing of irreparable injury, as presented to the district court, was unconvincing. Most significantly, the Ninth Circuit determined that, for the purposes of federal preemption, “downer” or nonambulatory animals might be considered kinds of animals that states may categorically prohibit from entering the consumer market.

5 Nat’l Meat Ass’n, 599 F.3d at 1096.
7 Nat’l Meat Ass’n, 599 F.3d at 1097.
This note will first provide a general overview of the background behind California’s Section 599f and the federal preemption doctrine in the field of food policy regulation. Second, this note will discuss and analyze the Eastern District of California and Ninth Circuit decisions more thoroughly. Finally, this work will conclude by analyzing the significance of the Ninth Circuit’s holding, the issues the U.S. Supreme Court might consider should it grant the NMA’s petition for certiorari, and the future implications of the legal reasoning in National Meat Association v. Brown.8

I. HISTORICAL CONTEXT AND LEGAL BACKGROUND

A. Historical Context

The Humane Society investigation that prompted California’s Section 599f amendment took place in late 2007 at the federally inspected slaughter and processing facility of Hallmark Meat Packing Company and Westland Meat Company, Inc., located in Chino, California.9 As of 2007, the facility was “the second-largest supplier of beef to the National School Lunch Program.”10 A Humane Society investigator documented employees using cruel practices to move nonambulatory animals down the slaughter line.11 Such practices included “ramming cows with the blades of a forklift, jabbing them in the eyes, [and] applying painful electrical shocks.”12 Additional footage revealed “workers trying to get nonambulatory cows to stand by spraying pressurized water into their noses to simulate drowning.”13

8 Petition for Writ of Certiorari, Nat’l Meat Ass’n, 599 F.3d 1093 (No. 10-224).
9 Lovvorn & Perry, supra note 2.
11 Lovvorn & Perry, supra note 2, at 156–57.
13 Persky, supra note 2, at 58.
The release of the Humane Society’s investigation triggered rapid responses from the U.S. Department of Agriculture (USDA) and various members of Congress.\textsuperscript{14} Within forty-eight hours of the USDA’s interview with the Humane Society investigator, the agency held a press conference to announce “a massive meat recall from the facility.”\textsuperscript{15} More than 150 school districts across the nation and two major chain restaurants announced that they would “stop buying ground beef from Westland, the company that distributed Hallmark meat products.”\textsuperscript{16} Public health officials warned that meat from nonambulatory animals was “more likely to be diseased.”\textsuperscript{17} The USDA investigation culminated in the mandatory recall of more than “143 million pounds of frozen beef from the slaughterhouse,” the largest amount in U.S. history.\textsuperscript{18} After a notice and comment period, Secretary of Agriculture Tom Vilsack announced a final rule amending the federal meat inspection regulations, requiring a “complete ban on the slaughter of cattle that become non-ambulatory disabled after passing initial inspection by Food Safety and Inspection Service (FSIS) inspection program personnel.”\textsuperscript{19}

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\textsuperscript{15} Lovvorn & Perry, \textit{supra} note 2, at 157.
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\textsuperscript{17} Persky, \textit{supra} note 2, at 58.
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\textsuperscript{18} \textit{Id.}; see also USDA Orders Recall of 143 Million Pounds of Beef, CNN Health (Feb. 17, 2008), http://articles.cnn.com/2008-02-17/health/beef.recall_1_ ground-beef-bse-usda-s-food?_s=PM:HEALTH.
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and other non-cattle livestock, however, remained eligible for slaughter and consumption.

B. Legal Background

The key provisions of Section 599f challenged by the NMA include parts (a)–(c) and part (e). Together, the provisions ban the sale, receipt, and slaughter of downer animals and require humane handling of nonambulatory animals. Section 599f(c) further requires slaughterhouses to take “immediate action to humanely euthanize” any nonambulatory animal. Although the NMA challenged Section 599f on several constitutional grounds, the Eastern District of California and the Ninth Circuit focused exclusively on preemption issues for the purposes of the preliminary injunction motion. Jeremy Russell, a spokesperson for the NMA, contends that the “California law is vague and replaces a very solid standard that has evolved over 100 years of regulatory action,” and that the “best thing [for the industry and consumers] is to have a good, clear federal standard that is backed up by the research from the U.S. Department of Agriculture.”

Under the Supremacy Clause of the U.S. Constitution, federal law may preempt state law, either expressly or by implication. More
specifically, the Supreme Court has articulated three ways a federal law may preempt state law. First, over areas where Congress has the power to legislate, Congress “can define explicitly the extent to which its enactments pre-empt state law.” Preemption is “fundamentally” a question about Congress’s intent behind the legislation, and “when Congress has made its intent known through explicit statutory language, the court’s task is an easy one.” Second, if Congress has not provided explicit statutory language, “state law is pre-empted where it regulates conduct in a field that Congress intended the Federal Government to occupy exclusively.” The Supreme Court has emphasized, however, that when dealing with areas of law traditionally regulated by the states, congressional intent to supersede state law must be “clear and manifest.” Finally, through “conflict preemption,” a state law is preempted when it is “impossible for a private party to comply with both state and federal requirements.” While the “policy pronouncement[s]” concerning when or why Congress preempts state regulations fail to demarcate a bright line, a “predominant function of preemption” is often to “invalidate state laws that frustrate the development of necessary, uniform federal laws.”

U.S. 70, 76 (2008) (“Consistent with that command, we have long recognized that state laws that conflict with federal law are ‘without effect.’”) (quoting Maryland v. Louisiana, 451 U.S. 725, 746 (1981)).


25 English, 496 U.S. at 79 (citing Schneidewind v. ANR Pipeline Co., 485 U.S. 293, 299 (1988)).

26 English, 496 U.S. at 79; Nat’l Meat Ass’n, 599 F.3d at 1097.


29 David F. Welsh, Comment, Environmental Marketing and Federal Preemption of State Law: Eliminating the “Gray” Behind the “Green,” 81 Calif. L. Rev. 991, 1014 (1993) (“Additionally, preemption often acts as a means of stopping states from interfering with the free flow of goods across state lines. In both of these cases, preemption is used to stop states from fractionalizing the country in pursuit of independent, local commercial concerns. As the Supreme Court clearly stated, ‘a central concern of the Framers . . . [was] that in order to succeed, the new Union would have to avoid the tendencies toward economic Balkanization that had plagued relations . . . among the States under the Articles of Confederation.’” (quoting Hughes v. Oklahoma, 441 U.S. 322, 325–26 (1979)); but see Mario’s Butcher Shop & Food Ctr., Inc. v. Armour & Co., 574
The Federal Meat Inspection Act (FMIA),30 ratified in 1906 and amended by the Wholesome Meat Act of 1967 (WMA), vests the USDA with “the responsibility to inspect animals for disease before and after slaughter, inspect slaughter and processing locations and, like the [Food and Drug Administration], establish and enforce guidelines for the safety of these types of products.”31 The FMIA contains “extensive provisions for the inspection of meat and meat food products, both before and after slaughtering, for the sanitary inspection and regulation of slaughtering and packing establishments, and for control over the importation and exportation of meat and meat food products.”32 The FMIA’s congressional statement of findings provided that:

It is essential in the public interest that the health and welfare of consumers be protected by assuring that meat and meat food products distributed to them are wholesome, not adulterated, and properly marked, labeled, and packaged . . . . It is hereby found that all articles and animals which are regulated under this chapter are either in interstate or foreign commerce or substantially affect such commerce, and that regulation by the Secretary and cooperation by the States . . . are appropriate to prevent and eliminate burdens upon such commerce, to effectively regulate such commerce, and to protect the health and welfare of consumers.33

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The Act requires humane methods of slaughter for both domestically produced and imported meat.34 Despite the existence of extensive federal regulation of meat and meat food products, many states have continued to legislate in the area.35 Such legislation raises significant preemption questions, particularly because the FMIA contains an explicit preemption provision.36

The legislative history of the 1967 amendments indicates a strong emphasis on the baseline nature of the federal program’s requirements.37 Moreover, the congressional reports to the 1967 amendments discuss at length the important cooperative relationship between the federal government and state governments in the field of meat inspection.38

34 21 U.S.C. §§ 610(b), 620(a) (2006); H.R. Rep. No. 95-1336 (1978), reprinted in 1978 U.S.C.C.A.N. 2650; see also Alperin & Chase, supra note 32 (“Congress believed it directly concerned the health of American consumers because witnesses testified to being sickened, physically as well as emotionally, and to changing their diet, foregoing a valuable source of protein, out of revulsion at the inhumane manner in which some livestock were handled.”).


36 21 U.S.C. § 678 provides, in relevant part: “Requirements within the scope of this chapter with respect to premises, facilities and operations of any establishment at which inspection is provided under subchapter I of this chapter, which are in addition to, or different than those made under this chapter may not be imposed by any State or Territory or the District of Columbia, except that any such jurisdiction may impose recordkeeping and other requirements within the scope of section 642 of this title, if consistent therewith, with respect to any such establishment. . . . This chapter shall not preclude any State or Territory or the District of Columbia from making requirement[s] or taking other action, consistent with this chapter, with respect to any other matters regulated under this chapter.”; see also Allen, supra note 35.

37 See, e.g., S. Rep. No. 90-799, at 4 (1967), reprinted in 1967 U.S.C.C.A.N. 2188, 2191 (“However, the committee wants it clearly understood that the requirements on wholesomeness, additives, labeling, and the other Federal regulations are not to be compromised and must be at least equal to Federal standards.”).

38 Id. at 2205: “[Section Fifteen] adds a new ‘Title III-- Federal and State Cooperation.’ New section 301(a) provides (1) for cooperation with appropriate State agencies in developing and administering a State meat inspection program in any State which has enacted a meat inspection law imposing mandatory inspection and sanitation requirements for intrastate operators, at least equal to the Federal requirements under Title I of the Federal act; (2) for cooperation with appropriate State agencies in developing and administering State programs
1967 Senate Report discussed the role of Section 408, the preemption provision codified at 21 U.S.C. § 678, as prohibiting states, territories, and the District of Columbia from “regulating operations at plants inspected under title I or from imposing marking, labeling, packaging, or ingredient requirements in addition to or different than those under the [FMIA] for articles prepared under inspection in accordance with title I of the act.” At the same time, Section 408 would permit states, territories, and the District of Columbia “to impose recordkeeping and related requirements with respect to such plants if consistent with the Federal requirements and to impose requirements consistent with the Federal provisions as to other matters regulated under the act.”

Two recent and significant decisions by the federal courts of appeal—Empacadora de Carnes de Fresnillo, S.A. de C.V. v. Curry in the Fifth Circuit and Cavel Int’l Inc. v. Madigan in the Seventh Circuit—clarified that there was no “indication Congress intended to prevent states from regulating the types of meat that can be sold for human consumption.” In Empacadora, the Fifth Circuit vacated the district court’s permanent injunction barring “the prosecution of slaughterhouses for processing, selling and transporting horsemeat for human consumption.” The court further held that Texas Agricultural Code Chapter 149, which prohibits the processing, sale, or transfer of horsemeat for human consumption, was not preempted by federal law. The court indicated that the preemption clause of the FMIA “is more naturally read as being concerned with the methods, standards of quality, and packaging that slaughterhouses use.”

under State laws containing authorities at least equal to those provided in title II of the act; and (3) for cooperation with other Federal agencies in carrying out any provisions of the Federal Meat Inspection Act. The cooperation with States may include planning assistance in developing the program, technical and laboratory assistance and training, and Federal financing up to 50 percent of the total cost of the cooperative program.”
Much like the Fifth Circuit in Empacadora, the Seventh Circuit in Cavel declined to grant a preliminary injunction barring the enforcement of an Illinois statutory amendment prohibiting the slaughter of horses for human consumption.\(^{47}\) Among other challenges, the plaintiff contended that the FMIA preempted the Illinois law.\(^{48}\) Rejecting Cavel’s contention, the court reasoned that “[t]he [FMIA] is concerned with inspecting premises at which meat is produced for human consumption . . . rather than with preserving the production of particular types of meat for people to eat.”\(^{49}\)

The Supreme Court denied certiorari for both the Empacadora\(^{50}\) and Cavel\(^{51}\) decisions in May of 2007 and June of 2008, respectively. The NMA’s preemption challenge to California’s Section 599f emerged in the wake of these decisions.

II. THE NATIONAL MEAT ASSOCIATION v. BROWN JUDICIAL DECISIONS

The NMA filed suit in the Eastern District of California, challenging Section 599f on a variety of constitutional grounds, including federal preemption.\(^{52}\) The NMA sought a preliminary injunction enjoining the enforcement of California’s amended Section 599f, effective January 1, 2009, against swine slaughterhouses regulated by the FMIA.\(^{53}\)

\(^{47}\) Cavel, 500 F.3d at 559.

\(^{48}\) Id. at 553.

\(^{49}\) Id. at 554 (“Given that horse meat is produced for human consumption, its production must comply with the Meat Inspection Act. But if it is not produced, there is nothing, so far as horse meat is concerned, for the Act to work upon.”); see also Empacadora, 476 F.3d at 333.

\(^{50}\) 550 U.S. 957 (2007).


\(^{53}\) Id. at *1; See also id. at *12 (“A preliminary injunction ‘may only be granted when the moving party has demonstrated a significant threat of irreparable injury, irrespective of the magnitude of the injury.’”) (citation omitted); FDIC v. Garner, 125 F.3d 1272, 1276 (9th Cir. 1997) (“The grant of a preliminary injunction will be reversed only where the district court abused its discretion or based its decision on an erroneous legal standard or on clearly erroneous findings of facts.”); see also Simula, Inc. v. Autoliv, Inc., 175 F.3d 716, 725 (9th Cir. 1999); Big Country Foods, Inc. v. Bd. of Educ., 868 F.2d 1085, 1088 (9th Cir. 1989).
district court focused on the NMA’s challenge that the FMIA’s express preemption provision\(^{54}\) precludes state requirements that are in addition to or different from those imposed by the federal regulations.\(^{55}\) The NMA argued, and the district court agreed, that Section 599f imposed additional or different requirements because it prohibited slaughterhouses from “allowing meat from a nonambulatory animal, in particular swine, to be processed or butchered for human consumption.”\(^{56}\) The district court found both express\(^{57}\) and conflict preemption in considering the challenge to Section 599f.\(^{58}\)

The district court held that the FMIA’s preemption clause expressly limits states in their ability to govern meat inspection and labeling requirements at any establishment where inspection is mandated under the FMIA, stressing that the express preemption provision of the FMIA “contemplates all meat inspection shall be according to the standards in [the] FMIA.”\(^{59}\) Pointing out what it perceived as a major obstacle to Section 599f’s constitutionality, the district court noted that the FMIA and its implementing regulations permit a slaughterhouse to set aside for further inspection an animal that is nonambulatory.\(^{60}\) Section 599f, specifically part (c), however, requires that the same nonambulatory animal be immediately euthanized. The district court noted that the California requirements, including the immediate euthanization of nonambulatory animals, impose “additional” or “different” requirements than those required by the FMIA.\(^{61}\)


\(^{56}\) Id.

\(^{57}\) Id. at *8.

\(^{58}\) Id. at *10.

\(^{59}\) Id. at *8.

\(^{60}\) Id. at *7–8 (“The USDA classifies all downed livestock presented for slaughter as ‘U.S. Suspects.’ A non-ambulatory disabled animal may be set aside and later presented for slaughter. . . . If upon inspection, the downed animal shows signs of certain diseases, it is condemned and disposed of according to specified procedures.”); see generally Ante-Mortem Inspection Rules, 9 C.F.R. §§ 309.1–309.18 (2011); see also Disposal of Diseased or Otherwise Adulterated Carcasses and Parts Rule, 9 C.F.R. § 311.1 (2011) (providing that if a nonambulatory animal passes a postmortem inspection by a veterinary officer, the meat from the animal may be approved for human consumption, in whole or in part).

The district court, unlike the Ninth Circuit hearing the case on appeal, was not persuaded by California’s “type of meat” argument:

California’s argument is without merit. *Empacadora* stated that the FMIA does not prohibit a state from barring any particular type of animal from being introduced into the food chain, such as horse meat. Thus, a state rightly could preclude different types of meat for human consumption, such as horse meat or dog meat or rat meat, for that matter. A nonambulatory pig is not a “type of meat.” A pig is a pig. A pig that is laying down is a pig. A pig with three legs is a pig. A fatigued or diseased pig is a pig. Calling it something else does not change the type of meat produced. Thus, the exception discussed in *Empacadora* does not apply.62

The district court concluded that, having allowed swine to enter the food supply, California could not alter the federally mandated inspection requirements of such animals.63 As such, the district court held that Section 599f impermissibly differed from the FMIA and was therefore likely preempted by the federal program.64

The district court continued the injunction analysis by considering the potential irreparable injury that the NMA might suffer if the court were not to grant the plaintiff’s request for injunctive relief. The NMA

62 *Id.* at *8–9* (internal citations omitted).
63 *Id.* at *9.
64 *Id.* at *10. In addition to express preemption, the district court also found conflict preemption between Section 599f and the FMIA. A conflict preemption analysis “examines the federal statute as a whole to determine whether a party’s compliance with both federal and state requirements is impossible or whether, in light of the federal statute’s purpose and intended effects, state law poses an obstacle to the accomplishment of Congress’s objectives.” *Id.* at *11* (citing Whistler Inv., Inc. v. Depository Trust & Clearing Corp., 539 F.3d 1159, 1164 (9th Cir. 2008)). The district court suggested that Section 599f’s “additional state requirements conflict in areas that are clearly encompassed by the federal regulations.” *Id.* As the district court found both express and implied preemption, it refrained from continuing with the plaintiff’s dormant Commerce Clause and “constitutionally vague” arguments. *Id.* at *10.
offered as an example that one facility would be required to euthanize and render approximately 225 additional hogs per day, resulting in “a costly expansion of the facility and a significant loss of annual revenues.”

Moreover, the district court emphasized that such pecuniary losses would not be recoverable because the “[d]efendants enjoy immunity from suit for damages.” The district court concluded that the NMA was faced with an immediate threat of irreparable harm sufficient to support the grant of a preliminary injunction. In balancing the NMA’s harm against the equities in the defendant’s favor, the district court found that federal protections provided under the FMIA program and its accompanying regulations were sufficient to safeguard the public health in California.

Following the district court’s decision to grant a preliminary injunction enjoining the enforcement of Section 599f in its entirety, California filed an interlocutory appeal. The Ninth Circuit Court of Appeals vacated the district court’s preliminary injunction, finding that Section 599f was not preempted by the FMIA and that the district court abused its discretion in finding otherwise.

The Ninth Circuit prefaced its preemption discussion by reasserting the “strong presumption against preemption, especially when the state law deals with matters like health and animal welfare, which have historically been regulated by states.” In its initial consideration of

65 Id. at *12.
66 Id.
67 Id. at *14.
68 Id. at *15.
69 Nat’l Meat Ass’n v. Brown, 599 F.3d 1093, 1096 (9th Cir. 2010).
70 Id. at 1097, 1101 (reviewing for abuse of discretion—that is, whether the district court’s decision was “based on an erroneous legal standard or clearly erroneous findings of fact.”); see also Stormans, Inc. v. Selecky, 586 F.3d 1109, 1119 (9th Cir. 2009). Preemption is subject to de novo review. Am. Trucking Ass’ns v. Los Angeles, 559 F.3d 1046, 1052 (9th Cir. 2009).
71 Nat’l Meat Ass’n, 599 F.3d at 1097. In Wyeth v. Levine, 555 U.S. 555, 565 (2009), the Supreme Court discussed two “cornerstones” of preemption jurisprudence. First, “the purpose of Congress is the ultimate touchstone in every pre-emption case.” Medtronic, Inc. v. Lohr, 518 U.S. 470, 485 (1996) (internal punctuation omitted); see also Retail Clerks v. Schermerhorn, 375 U.S. 96, 103 (1963). Second, “[i]n all pre-emption cases, and particularly in those in which Congress has ‘legislated . . . in a field which the States have traditionally occupied,’ . . . we ‘start with the assumption that the historic police powers of the States were not to be superseded by the Federal Act unless that
express preemption, the Ninth Circuit stressed that the court must give the FMIA’s express preemption provision a narrow interpretation.\textsuperscript{72} In concluding that 21 U.S.C. § 678 did not preempt most of California’s Section 599f, the court reasoned that Section 678 preempts state regulation of “the premises, facilities and operations” of the slaughterhouses. The court continued by suggesting that Section 599f(a)-(c), or California's nonambulatory receipt and slaughter ban and immediate euthanization provisions, regulated neither the premises or facilities, nor operations, but rather the \textit{kind of animal} that may be slaughtered. In short, the court of appeals accepted the precise argument that the district court rejected.\textsuperscript{73}

As discussed above, the Fifth and Seventh Circuits have held that the FMIA does not preempt state laws that regulate the type of animal that may be slaughtered for human consumption.\textsuperscript{74} The Ninth Circuit focused

\textsuperscript{72} For discussions of the FMIA’s express preemption provision, compare \textit{Nat’l Meat Ass’n}, 599 F.3d at 1098 (“[r]equirements within the scope of this chapter with respect to \textit{premises, facilities and operations} of any establishment at which inspection is provided under subchapter I of this chapter which are in addition to, or different than those made under this chapter may not be imposed by any State . . . .”) (quoting 21 U.S.C. § 678) (emphasis added by the court of appeals), with \textit{Nat’l Meat Ass’n} v. Brown, No. CV-F-08-1963, 2009 WL 426213, at *6 (E.D. Cal. Feb. 19, 2009) (“[r]equirements within the scope of this chapter with respect to \textit{premises, facilities and operations} of any establishment at which inspection is provided . . . which are \textit{in addition to, or different than} those made under this chapter may not be imposed by any State . . . .”) (quoting 21 U.S.C. § 678) (emphasis added by the district court)). The Ninth Circuit has stated that preemption should be construed narrowly. Air Conditioning & Refrigeration Inst. v. Energy Res. Conservation & Dev. Comm’n, 410 F.3d 492, 496 (9th Cir. 2005) (“Our interpretation of the federal statute is informed by two presumptions about the nature of preemption. First, we address claims of preemption with the starting presumption that Congress did not intend to supplant state law. Where, as is the case here, the State regulates in an area where there is no history of significant federal presence, we assume that the ‘historic police powers of the States were not to be superseded by the Federal Act unless that was the clear and manifest purpose of Congress.’ This presumption against preemption leads us to the principle that express preemption statutory provisions should be given a narrow interpretation.”) (citations and quotations omitted).

\textsuperscript{73} \textit{Nat’l Meat Ass’n}, 599 F.3d at 1098.

\textsuperscript{74} \textit{Id.}
on these cases, which prohibited the sale and receipt of horsemeat, to suggest that while the FMIA establishes inspection procedures to ensure animals that are slaughtered are safe for human consumption, the FMIA does not preclude states from banning the slaughter of certain kinds of animals altogether:

The district court sought to distinguish Cavel and Empacadora: “A nonambulatory pig is not a ‘type of meat.’ A pig is a pig . . . .” In effect the district court reasoned that states may ban the slaughter of certain species, but once a state allows a species to be slaughtered, it cannot impose further restrictions. Hogwash.75

While the court of appeals recognized that limits existed as to what states may regulate with regards to meat and slaughter policy, the court made clear that it “need not decide what limits the express preemption provision [of the FMIA] places on such regulations.”76 Rather, the court emphasized that:

California’s prohibition of the slaughter of nonambulatory animals does not duplicate federal procedures; it withdraws from slaughter animals that are unable to walk to their death. This prohibition doesn’t require any additional or different inspections than does the FMIA, and is thus not a regulation of the “premises, facilities or operations” of slaughterhouses.77

In finding no express preemption, the Ninth Circuit limited its preemption analysis to parts (a)-(c) of Section 599f. The court next considered whether Section 599f(a)-(c) might present an issue of implied preemption, and found that the NMA’s implied preemption claim

75 Id.
76 Id. at 1098–99 (contemplating that a state believing federal inspection standards to be too lenient “may try to establish stricter inspection standards, and style the new standards as a regulation of the ‘kind of animal’ that may be slaughtered. . . . Such regulations could effectively establish a parallel state meat-inspection system.”).
77 Id. at 1099.
concerning California’s ban on the receipt and slaughter of nonambulatory animals “fare[d] no better than its claim of express preemption.” The court emphasized that the language of 21 U.S.C. § 678 specifies that the FMIA statutory and regulatory framework “shall not preclude any State . . . from making requirement[s] or taking other action, consistent with this chapter, with respect to any other matter regulated under this chapter,” indicating that Congress did not intend to occupy the field of slaughterhouse regulation with respect to the type of animal slaughtered. The court concluded its preemption analysis by considering conflict preemption, providing, as a guiding principle, that “[c]onflict preemption is a demanding standard,” and that courts should not seek out “conflicts between state and federal regulation where none clearly exists.” The court emphasized that it would not be “physically impossible” for the NMA to comply with both the FMIA requirements and Section 599f. The court stressed that Section 599f’s directive to slaughterhouses is “simple: [w] hen slaughterhouses see a nonambulatory animal, they cannot slaughter it for human consumption but must euthanize it immediately. There is no reason to believe that slaughter-house employees who abide by this directive will have any difficulty complying with federal inspection standards as to those animals that will be slaughtered for food.”

The Ninth Circuit continued its discussion by acknowledging that Section 599f(e) presented a different preemption issue. The Humane Handling Requirements, prescribed by part (e) of Section 599f, provide that while in “transit or on the premises of a stockyard, auction, market agency, dealer, or slaughterhouse, a nonambulatory animal may not be dragged at any time, or pushed with equipment at any time.” The court noted that federal law, by contrast, states that “[t]he dragging of disabled animals and other animals unable to move, while conscious, is prohibited.

78 Id.
79 Id.
80 Id. To support this point, the Court cites English v. Gen. Electric Co., 496 U.S. 72, 90 (1990), in which the Supreme Court noted its repeated observation “that pre-emption is ordinarily not to be implied absent an ‘actual conflict.’”
81 Nat’l Meat Ass’n, 599 F.3d at 1099 (citing Fla. Lime & Avocado Growers, Inc. v. Paul, 373 U.S. 132, 147–48 (1963), in which the Supreme Court allowed stricter state standards where, by the very terms of the federal regulations, the federal statute purported only to “establish minimum standards.”)
82 Id. at 1100.
83 Id. at 1101.
Stunned animals may, however, be dragged.” 84 Moreover, as the court recognized, the FMIA requirements apply not simply to animals intended for human consumption, but to “all animals at the slaughterhouse.” 85 Indeed, the federal regulations provide further specificity, including what equipment is suitable for handling downer animals. 86 The Ninth Circuit thus held that Section 599f(e) is a regulation of the operations of an establishment at which federal inspection is provided and different from federal law—and, as such, likely is expressly preempted by the FMIA. 87

The Ninth Circuit continued its analysis by focusing on the NMA’s potential irreparable harm. 88 The court summarily determined that the NMA failed to show a “likelihood of irreparable injury” and lacked convincing evidence that the balance of the equities and the public interest tip in the NMA’s favor as to Section 599f(e). 89 The court further indicated that “[c]ontrary to NMA’s argument, the likelihood of success as to section 599f(e) doesn’t affect the likelihood of success as to section 599f(a)–(c).” 90

84 Id. at 1101 (quoting 9 C.F.R. § 313.2(d)(2) (2010)) (emphasis added by the court of appeals).
85 Nat’l Meat Ass’n, 599 F.3d at 1101 (citing Ante-Mortem Livestock Inspection, Food Safety and Inspection Service Directive 6100.1 at 4 (Apr. 16, 2009)) (“All animals that are on the premises of the establishment . . . are to be handled humanely.”).
86 See 9 C.F.R. § 313.2(d)(3) (2010) (“Disabled animals and other animals unable to move may be moved, while conscious, on equipment suitable for such purposes; e.g., stone boats.”). California’s Section 599f(e) entirely prohibits the dragging of downer animals, regardless of the animals’ state of consciousness.
87 Nat’l Meat Ass’n, 599 F.3d at 1101.
88 Id. at 1101–02.
89 Id. at 1101–02 (“The district court failed to make [findings concerning NMA’s irreparable injury with regards] to section 599f(e)’s humane handling requirements, probably because NMA failed to offer any evidence on the issue.”). Arguably, the court may have failed to consider evidence proffered by the NMA suggesting that one swine facility would be required to “euthanize and render approximately 225 additional hogs per day,” forcing a “costly expansion of the facility” and a “significant loss of annual revenues.” Nat’l Meat Ass’n, 2009 WL 426213, at *12 (1:08-CV-01963 Docket No. 20, Terrill Decl. ¶ 9 (225 hogs), ¶ 12 (cost of compliance)).
90 Nat’l Meat Ass’n, 599 F.3d at 1101 (citing Dalton v. Little Rock Family Planning Servs., 516 U.S. 474, 478 (1996)).
The court of appeals concluded by holding that the district court abused its discretion in granting the NMA a preliminary injunction and vacated the injunction.\footnote{Id.} However, the court of appeals maintained that its decision would not preclude “entry of a preliminary injunction as to section 599f(e) after appropriate findings are made, or a preliminary injunction as to the entirety of section 599f based on other legal theories.”\footnote{Id. at 1101–02.}

III. **Analysis and Implications of National Meat Association v. Brown**

The upshot of the Ninth Circuit’s decision is that California is no longer enjoined from enforcing Section 599f, and nonambulatory swine meat will not be able to reach consumer markets, pending the adjudication of the declaratory judgment claim on its merits. A number of significant issues emerge in reviewing the Ninth Circuit’s decision and legal reasoning. Based on the development of preemption case law with regard to meat inspection regulations, the Ninth Circuit appears to have reasonably interpreted the preemption provision of the FMIA, prioritizing California’s interest in safeguarding public health over the economic concerns of the meat industry and properly vacating the district court’s preliminary injunction.

**A. Nonambulatory Animals as a “Kind of Animal”**

The Ninth Circuit confronted a significant challenge in evaluating the constitutionality of California’s Section 599f. While the species-wide argument had been compelling and convincing in the aforementioned courts of appeal cases, the challenge in *National Meat Association* and the defense urged by the State of California presented a novel view of the discretion states have in regulating certain food-related public health concerns. Furthermore, the Ninth Circuit had to wrestle with multiple competing interests in the dispute: California’s interest in promoting public safety and ensuring healthy meat products weighed against the federal government’s concern in establishing a consistent and uniform national meat inspection system, as well as the state’s desire to protect and
promote animal welfare weighed against the meat industry’s interest in using animal products efficiently and profitably. Ultimately, the creative application of the FMIA exemption described in earlier cases (Empacadora and Cavel) to California’s Section 599f(a)-(c) appears to further the broad public interest goals of the federal program without frustrating the effectiveness of its national design.

At a crucial point in its decision, the Ninth Circuit asserted that states should not be limited to excluding animals from slaughter on a species-wide basis. Indeed, the court’s lengthy discussion on this point suggests that states should have broad discretion when it comes to categorically prohibiting specific breeds or types of animals from slaughter for human consumption:

What if a state wanted to ban the slaughter of a specific breed of pig but not the entire species? Or to allow wild dogs and horses to be slaughtered, but not domesticated companions? And what if, in response to a population problem, a state only banned the slaughter of female cattle? Or, perhaps, due to ethical concerns, prohibited the slaughter of non-free range animals? Regulating what kinds of animals may be slaughtered calls for a host of practical, moral and public health judgments that go far beyond those made in the FMIA. These are the kinds of judgments reserved to the states, and nothing in the FMIA requires states to make them on a species-wide basis or not at all. Federal law regulates the meat inspection process; states are free to decide which animals may be turned into meat.

The Ninth Circuit appropriately cited Empacadora and Cavel for the premise that states have the power to regulate the kind of animal that may be slaughtered.

93 Id. at 1098–99.
94 Id.
95 Id. at 1098.
In contrast to the Ninth Circuit in *National Meat Association*, the Fifth Circuit in *Empacadora* looked to the federal statute to bolster its “type of meat” argument. 96 The court reasoned:

[T]he FMIA only states that horsemeat is “capable of use as human food” which applies to any meat unless it is “naturally inedible by humans,” denatured, or otherwise identified to deter its use as human food. 21 U.S.C. § 601(j)-(k). 97 It in no way suggests that horsemeat must be legalized for human consumption. This is a less important observation to this analysis than it was to the repeal analysis above, since even if the FMIA implicitly recognizes the legality of selling horsemeat for human consumption, that does not necessarily preclude a state from prohibiting it unless Congress additionally intended to preempt such legislation. 98

96 *Empacadora de Carnes de Fresnillo, S.A. de C.V. v. Curry*, 476 F.3d 326, 333 (5th Cir. 2007) (“This preemption clause expressly limits states in their ability to govern meat inspection and labeling requirements. It in no way limits states in their ability to regulate what types of meat may be sold for human consumption in the first place.”).

97 21 U.S.C. § 601 provides the definitions for the FMIA. 21 U.S.C. § 601(j) defines “meat food product” as “any product capable of use as human food which is made wholly or in part from any meat or other portion of the carcass of any cattle, sheep, swine, or goats, excepting products which contain meat or other portions of such carcasses only in a relatively small proportion or historically have not been considered by consumers as products of the meat food industry, and which are exempted from definition as a meat food product by the Secretary under such conditions as he may prescribe to assure that the meat or other portions of such carcasses contained in such product are not adulterated and that such products are not represented as meat food products. *This term as applied to food products of equines shall have a meaning comparable to that provided in this paragraph with respect to cattle, sheep, swine, and goats.*” (emphasis added). 21 U.S.C. § 601(k) further clarifies that the term “capable of use as human food” shall apply to “any carcass, or part or product of a carcass, of any animal, unless it is denatured or otherwise identified as required by regulations prescribed by the Secretary to deter its use as human food, or it is naturally inedible by humans.”

98 *Empacadora*, 476 F.3d at 333 n.4.

The Fifth Circuit stressed that this provision of the FMIA could not be read as expressly preempting Texas’s prohibition on horsemeat for human consumption. The FMIA’s preemption clause is “more naturally read as being concerned with the methods, standards of quality, and packaging that slaughterhouses use,” matters with which the Texas prohibition, Chapter 149, was “entirely unconcerned.”\(^99\) As discussed earlier, the *Empacadora* court reached the significant conclusion that the “FMIA does not expressly dispose states of the ability to define what meats may be available for slaughter and human consumption.”\(^100\)

The Ninth Circuit was presented with a more difficult preemption issue in National Meat Association. Towards the end of the Ninth Circuit’s express preemption discussion, the court acknowledged that some state regulations could “effectively establish a parallel state meat-inspection system” and that such a system would be precluded by 21 U.S.C. § 678.\(^101\) However, the court failed to squarely reconcile how Section 599f(c), which prohibits slaughterhouses from holding a nonambulatory animal without “taking immediate action to humanely euthanize the animal” does not intrude upon the FMIA’s regulatory framework set forth at 9 C.F.R. §§ 309-311, which does not require slaughterhouses to immediately euthanize nonambulatory swine.

The FMIA’s preemption provision, as discussed earlier, prohibits states from imposing additional or different requirements with respect to “premises, facilities and operations of any establishment at which inspection is provided.”\(^102\) At first glance, it might appear that California’s Section 599f(c) may be creating a different operation at swine slaughterhouses where inspection is provided. As discussed above, Section 309.2 of the FMIA regulations provides that “all seriously crippled animals and non-ambulatory disabled livestock shall be identified as U.S. Suspects and disposed of as provided in § 311.1 of this subchapter unless they are

\(^{99}\) *Id.* at 333. Much like the district court in *National Meat Association*, the *Empacadora* district court found that “[p]reventing slaughterhouses . . . from selling or possessing horsemeat for human consumption . . . is an attempt by Texas to regulate the premises, facilities and operations of [the] slaughterhouses.”

\(^{100}\) *Id.*

\(^{101}\) *Nat’l Meat Ass’n v. Brown*, 599 F.3d 1093, 1099 (9th Cir. 2010).

required to be classed as condemned under § 309.3."\textsuperscript{103} Section 311.1 of the FMIA regulations further provides that:

\begin{quote}
[The] carcasses or parts of carcasses of all animals slaughtered at an official establishment and found at the time of slaughter or at any subsequent inspection to be affected with any of the diseases or conditions named in this part shall be disposed of according to the section pertaining to the disease or condition. . . . The veterinary medical officer shall exercise his judgment regarding the disposition of all carcasses or parts of carcasses under this part in a manner which will insure that only wholesome, unadulterated product is passed for human food.\textsuperscript{104}
\end{quote}

Finally, 9 C.F.R. § 309.3(e) establishes that slaughterhouse personnel must notify federal FSIS officers when cattle become nonambulatory disabled after passing ante-mortem inspection.\textsuperscript{105} Crucially, the language of the federal program indicates that slaughterhouses are required to follow the procedures established by the FMIA; the provisions are not discretionary.\textsuperscript{106}

As such, it appears that Congress expressly intended to control the processes through which meat from nonambulatory animals might enter the consumer market. However, the regulations do not provide that states must allow the slaughter, sale, or receipt of nonambulatory meat. Rather, as the Ninth Circuit indicated, the FMIA provides mandatory guidelines should states allow the slaughter of nonambulatory animals. If Congress or the USDA had wanted to require states to allow nonambulatory meat to reach consumer markets, those legislators and administrators could have stated so explicitly.\textsuperscript{107}

\footnotesize
\begin{itemize}
\item \textsuperscript{103} 9 C.F.R. § 309.2(b) (2011).
\item \textsuperscript{104} 9 C.F.R. § 311.1(a) (2011).
\item \textsuperscript{105} 9 C.F.R. § 309.3(e) (2011).
\item \textsuperscript{106} See, e.g., 9 C.F.R. § 311.1(a) (2011) (“[C]arcasses or parts of carcasses of all animals slaughtered at an official establishment . . . shall be disposed of according to the section pertaining to the disease or condition. . . . The veterinary medical officer shall exercise his judgment regarding the disposition of all carcasses or parts of carcasses.”) (emphasis added).
\item \textsuperscript{107} “Over areas where Congress has the power to legislate, Congress ‘can define explicitly the extent to which its enactments pre-empt state law.’” English v.
The FMIA provides, rather, that “no person, firm, or corporation
shall, with respect to any cattle, sheep, swine, goats, horses, mules, or other
equines, or any carcasses, parts of carcasses, meat or meat food product of
any such animals . . . slaughter any such animals . . . except in compliance
with the requirements of this chapter.”108 One of the major objects of the
FMIA is to “safeguard the food products in question against alteration
or substitution,” thus enabling government officials “to systematize
and render effective the process of inspection.”109 California’s Sections
599f(a) and (b) do not in any sense frustrate the FMIA’s procedures for
safeguarding food products, nor do they hinder the government’s ability
to maximize the effectiveness of the inspection process.110 Rather, the
California amendment removes certain meat altogether from the latter
parts of the FMIA inspection process and from the public in general.
As the Ninth Circuit stressed, federal law regulates the meat inspection
process; states should be free to decide which animals may be turned into
meat.111

B. The Presumption Against Preemption in FMIA Litigation

In finding neither express nor implied preemption of the FMIA,
the Ninth Circuit limited its legal analysis to parts (a)-(c) of Section 599f,
recognizing that Section 599f(e)—the provision specifying the permitted
methods for moving nonambulatory animals—was likely preempted
by the FMIA’s framework.112 As the court indicated, 21 U.S.C. § 678
specifies: “[t]his chapter shall not preclude any State . . . from making
requirement[s] or taking other action, consistent with this chapter,

463 U.S. 85, 95–98 (1983)).
110 CAL. PENAL CODE § 599f(c) (2010), the “immediate euthanization” provision,
is perhaps more problematic—as discussed earlier, the FMIA operations with
regards to non-ambulatory animals do not require immediate euthanizing of
the animals. See 9 C.F.R. §§ 309–311 (2011). The wholesale ban on the
slaughter, sale, and receipt of non-ambulatory meat, however, appears to fit
more appropriately in the “kind of animal” exception discussed in Empacadora
and Cavel.
111 Nat’l Meat Ass’n v. Brown, 599 F.3d 1093, 1098–99 (9th Cir. 2010).
112 Id. at 1101–02.
with respect to any other matter regulated under this chapter.”113 The Ninth Circuit construed the FMIA’s preemption provision narrowly and with a presumption in favor of California against preemption. The jurisprudential evolution in the area of FMIA preemption, and public health litigation more broadly, supports the Ninth Circuit’s outcome.114

The two most significant cases discussed above—and the ones on which the Ninth Circuit most heavily relied—are Empacadora and Cavel. One comment on Empacadora and Cavel has reasoned that:

[The FMIA] did not preempt the field of meat commerce entirely; FMIA specifically referred to meat inspection, rather than a more comprehensive scheme of meat regulation and the need for uniform meat packaging, inspection and labeling regulations was strong, lest meat providers be forced to master various separate operating techniques to abide by conflicting state laws, but there was no similar need for uniformity with regard to what types of meat states permit to be sold.115

Furthermore, the FMIA did not preempt the Texas statute by conflict, as “complying with the statute would not breach any provision of the FMIA.”116 The FMIA regulated the production of horsemeat for human consumption “as long as such production occurred, but did not mandate such production.”117

A review of the instances in which courts have found state statutes preempted by the federal meat inspection program reveals Congress’s essential preemption concerns, as judicially interpreted. For example, in Jones v. Rath Packing Co., the Supreme Court affirmed the Ninth Circuit and District Court for the Central District of California, enjoining the

113 Id. at 1099 (quoting 21 U.S.C. § 678 (2006)).
114 See Empacadora de Carnes de Fresnillo, S.A. de C.V. v. Curry, 476 F.3d 326 (5th Cir. 2007); Cavel Int’l Inc. v. Madigan, 500 F.3d 551 (7th Cir. 2007); Chi.-Midwest Meat Ass’n v. City of Evanston, 589 F.2d 278, 280 (7th Cir. 1978); see also Physicians Comm. for Responsible Med. v. McDonald’s Corp., 114 Cal. Rptr. 3d 414 (Cal. Ct. App. 2010).
115 Allen, supra note 35, § 3(b), at 29 (Supp. 2010) (emphasis added).
116 Id.
117 Id.

enforcement of California statutes that applied to meat processors. The state statutes in question made no allowance for loss of weight resulting from moisture loss during otherwise good food distribution practices. The federal regulations, on the other hand, allowed the Secretary of Agriculture to permit “reasonable variations” in the accuracy of the required statement of quantity. The Supreme Court found that the statutes, as applied to the meat processor, were preempted by the WMA, and that the California statutes were of the sort that had been precisely imagined by Congress when it inserted an express preemption provision into the FMIA banning operations requirements that were different from those prescribed by the federal regulations.

The District Court for the Central District of California, in *Cook Family Foods, Ltd. v. Voss*, considered a similar challenge between meat producers and California regulators. The *Cook* court dealt with “a ham producer, state and county regulators, and essentially the same state and federal laws” as were at issue in *Jones*. USDA regulations governed in detail the manner in which the plaintiff was to process, package, weigh, and label its cured pork products. The district court “properly enjoined the state from enforcing state regulations and procedures dealing with weighing of cured pork products where preemption of state law was expressly provided by [21 U.S.C. § 678], which prohibited imposition of marking, labeling, packaging, or ingredient requirements in addition to, or different than, those made under Federal Meat Inspection Act.” The *Cook* court reasoned that:

> Although the new California regulation apparently provides for reasonable moisture loss allowance, in its application the field inspectors are not required to do so. They may or may not, depending on their analysis of various factors. The language of the federal regulation is

120 *Jones*, 430 U.S. at 532 (“We therefore conclude that with respect to Rath’s packaged bacon, § 12211 and Art. 5 are pre-empted by federal law.”).
122 *Id.* at 1461.
124 Allen, *supra* note 35 at § 3(a), at 28 (Supp. 2010).
explicit, “reasonable variations . . . will be recognized.” Therefore, the state law is an obstacle to the execution of the full purposes and objectives that Congress sought in approving the federal legislation and, as such, is preempted.125

These cases present examples of non-discretionary language adopted by the USDA, and they underscore that one of the FMIA’s key policy concerns is ensuring consistent procedures, such as labeling, weighing, and packaging, across the national meat market.126

At the same time, the jurisprudence around FMIA preemption has indicated courts’ willingness to allow states to augment the federal regulations with regards to achieving certain public health goals. The Seventh Circuit, for example, in Chicago-Midwest Meat Association v. City of Evanston, affirmed the denial of a preliminary injunction enjoining certain Illinois municipal ordinances authorizing inspection of meat delivery vehicles.127 The Meat Association’s appeal turned primarily on whether the ordinances were preempted by or in conflict with the WMA.128 In explaining its preemption determination, the court offered:

Far from intending to preempt the entire field of meat inspection, Congress actually designed the Act to “protect the consuming public from meat and meat food products that are adulterated or misbranded and to assist in efforts by State and other Government agencies to accomplish this objective.” In brief, subchapter I of the Act provides meat inspection standards to be enforced by the Secretary of Agriculture. Congress made a special finding that all products and animals regulated by subchapter I “are either in interstate or foreign commerce or substantially affect such commerce.” Yet to promote the dual goals of

125 Cook Family Foods, Ltd., 781 F. Supp. at 1468 (citations omitted).
126 See, e.g., Nat’l Broiler Council v. Voss, 44 F.3d 740, 746 (9th Cir. 1994) (finding preemption under FMIA and noting that states may enforce the federal labeling laws, but that the USDA did not grant states authority to enact their own, additional requirements).
127 589 F.2d 278, 280 (7th Cir. 1978).
consumer protection and localized regulation of meat purity, Congress authorized the Secretary of Agriculture to cooperate with the states in developing and administering state meat inspection programs with requirements that are “at least equal to the provisions of subchapter I” of the Act.129

Distinguishing the Chicago Meat Association’s challenge from that of the plaintiff in Jones, the Seventh Circuit noted that Jones dealt with challenged state laws that were “different” from the federal standards prescribed by the FMIA and the WMA.130 Indeed, in Jones, both California’s laws and the federal regulations spoke to the “same thing,” namely “meat labeling.”131 By contrast, the Seventh Circuit pointed out that “federal law [was] silent on the subject of state regulation” in Chicago-Midwest Meat Association.132 In summarizing its opinion, the Seventh Circuit emphasized that the federal statute did not “explicitly or impliedly preempt [the] local ordinances” in question, nor were the ordinances inconsistent with the federal requirements.133 As both the

129 Chi.-Midwest Meat Ass’n, 589 F.2d at 282-83 (citations omitted). “The Senate Committee’s commentary clearly indicates that the states may regulate meat delivery vehicles not on the premises of the regulated establishment so long as the state law is not inconsistent with the Act that is, so long as it does not stand ‘as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.’ Id. at 283 (citing Hines v. Davidowitz, 312 U.S. 51, 67–68 (1941)). “The ordinances at issue here create no such obstacle.” Id.; see also S. Rep. No. 90–799 (1967), reprinted in 1967 U.S.C.C.A.N 2188, 2207. The court continued by emphasizing that: “[t]he association argue[d] that three other provisions . . . of the Act and two regulations promulgated by the Secretary of Agriculture that apply to the loading and transportation of meat, 9 C.F.R. §§ 308.9, 325.1(c) (1978), preempt the local ordinances at issue in this case. These provisions simply set forth the standards to be used by federal officials carrying out the inspections allowed by the Act of facilities and delivery vehicles on the premises of the regulated establishments. By providing for delivery vehicle inspection away from the premises of these establishments, the ordinances at issue here obviously do not conflict with the standards embodied in these provisions.” Chi.-Midwest Meat Ass’n, 589 F.2d at 283–84 (emphasis added).

130 Chi.-Midwest Meat Ass’n, 589 F.2d at 283–84 (emphasis added).

131 Id.

132 Id.

133 Id. at 284.
district court and the Seventh Circuit suggested in the Chicago-Midwest Meat Association decisions, the state ordinances furthered “the purpose of the [FMIA], the protection of the health and welfare of consumers.”

Another significant decision against preemption came down in Physicians Committee for Responsible Medicine v. McDonald’s Corporation. There, the Physicians Committee appealed the trial court’s grant of summary judgment in favor of McDonald’s. The trial court concluded that federal law preempted California’s Proposition 65 warnings provision, which required businesses to provide warnings to consumers of the presence of carcinogenic chemicals in the food the businesses sell and serve. The California Appellate Court reversed the trial court’s finding, concluding that the federal Poultry Products Inspection Act did not preempt California’s Safe Harbor Warning, urging that there was no “conflict between the [state-required] warning and any federal policy concerning chicken.”

Moreover, several legal scholars have highlighted a shift towards a “presumption against preemption” in the courts more broadly. Nina A. Mendelson, a Professor of Law from the University of Michigan Law School, for example, provides a number of arguments that have been offered in favor of protecting state autonomy to regulate. First, “we may value the authority of states to respond to particular preferences held by their residents.” Second, cooperative federalism may “stimulate

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134 Id.
135 114 Cal. Rptr. 3d 414 (Cal. Ct. App. 2010).
136 Id. at 417–18.
137 The plaintiff’s complaint “alleged that warnings about the PhIP in grilled chicken were required under the California Safe Drinking Water and Toxic Enforcement Act of 1986, Health and Safety Code section 25249 et seq. (Proposition 65), ‘under which restaurants and other businesses must provide persons with a ‘clear and reasonable warning’ before exposing consumers to carcinogenic chemicals in the food that they sell and serve.’” Id. at 418.
138 Id. at 425.
140 “For example, a state’s residents may value highly the ability to be informed of potential dangers presented by consumer products.” Mendelson, supra note
citizen participation in self-governance, on the theory that it is easier to participate at a level of government closer to one’s home.”

Third, state “policymaking experiments” may be a “useful source of information to other states and to the federal government.” For example:

[T]o address climate change, seven northeastern states have formed the Regional Greenhouse Gas Initiative to limit power plant carbon dioxide emissions. Continuing its historic leadership in regulating automotive pollution, the California legislature has voted to institute the first-ever limits on greenhouse gas emissions from cars. Sixteen states—representing a third of the new car market—have stated that they will adopt the California standards. Besides the other states that are following California’s lead, the federal government has begun to consider regulating motor vehicle greenhouse gas emissions.

139, at 709; see also Larry D. Kramer, Putting the Politics Back into the Political Safeguards of Federalism, 100 COLUM. L. REV. 215, 222 (2000) (arguing that federalism is best justified “because preferences for governmental policy are unevenly distributed among the states and regions of the nation, [so] more people can be satisfied by decentralized decisionmaking.”).


Mendelson, supra note 139, at 709 n.74. As an example, Mendelson points to Justice Brandeis’s well known characterization of states as laboratories for policymaking, in New State Ice Co. v. Liebmann, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting) (“To stay experimentation in things social and economic is a grave responsibility. Denial of the right to experiment may be fraught with serious consequences to the nation. It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”).

Id. at 709–10.
Finally, Mendelson contends that “preserving a significant degree of autonomy for state governments divides power and can be seen as part of the Framers’ efforts to ensure that no single government institution accumulates too much authority.”144 Moreover, “[b]y drawing attention to problems missed by national regulators and by choosing solutions different from those of national regulators, state regulators can prompt the public to hold the national government more accountable for its chosen solutions or for inaction.”145 By requiring a showing that Congress explicitly wished to preempt a particular area of state regulation, the “presumption against preemption erects an additional barrier before state law can be held to be preempted and thus gives some protection to state regulatory autonomy.”146

Understood in this context, affirming California’s right to ban the slaughter, sale, and receipt of nonambulatory animal meat—meat that raises severe public health concerns once it reaches the consumer market—seems in accordance with the legal reasoning adopted in FMIA-related preemption challenges and other similar cases involving public health and environmental regulation.147 Ultimately, it appears that Congress designed the FMIA and its amendments in order to protect the consuming public from meat and meat food products that are adulterated or misbranded, and to establish a national system, through cooperation between federal and state governments, to accomplish this goal. Though the California statute certainly raises significant questions of federalism, preemption, and the balance of regulatory power between the states and the federal government, a careful look at Section 599f(a)-(c) suggests that

144 Id. at 710; see also id. at 710 n.79 (“E.g., The Federalist No. 51 (James Madison) (the rights of the people are best protected in a system in which federal and state governments control each other); Evan H. Caminker, Judicial Solicitude for State Dignity, ANNALS AM. ACAD. POL. & SOC. SCI., Mar. 2001, at 81, 89 (noting the argument that the existence of states serves as a check against the excessive assertion of power by Congress”).
145 Mendelson, supra note 139, at 710; see also id. at 710 n.81 (“See, e.g., Kirsten H. Engel, Harnessing the Benefits of Dynamic Federalism in Environmental Law, 56 EMORY L.J. 159, 163 (2006) ([States can] ‘check’ the interest group capture of policymakers at the federal level.’”).
146 Id. at 710.
147 Kaufman, supra note 4 (“The downer animals roll around in feces and that can encourage or bring about e. coli,’ said Lisa Shames, director of Natural Resources and the Environment at the GAO.”).
no provision is expressly preempted by or in conflict with the FMIA. Rather, these provisions of the California statute appear to further the broad public health and welfare goals at the heart of the federal program.

**Conclusion**

On August 13, 2010, the NMA filed its petition for writ of certiorari to the U.S. Supreme Court. In the questions presented to the Court, the NMA argued that the Ninth Circuit erred in: (1) narrowly interpreting the FMIA’s express preemption provision; (2) overlooking the direct conflict between California’s nonambulatory handling requirements (immediate and humane euthanasia) and the federal handling regulations (separated and held for observation); and (3) holding that a state criminal law prohibiting slaughterhouses from buying, selling, receiving, processing, butchering, or holding a nonambulatory animal “is not a preempted attempt to regulate the ‘premises, facilities, [or] operations’ of federally regulated slaughterhouses.” The Supreme Court granted the Plaintiff’s Petition for Certiorari on June 27, 2011.

On January 23, 2012, as this article was being edited for publication, the Court reversed the Ninth Circuit in a unanimous decision authored by Justice Kagan. California faced a significant obstacle in prevailing before the Supreme Court with regards to parts (a)–(c) of Section 599f. The Court offered that FMIA’s preemption clause should be viewed as a broad provision. Echoing the California District Court, Justice Kagan concluded that the FMIA “prevents a State from imposing any additional or different—even if non-conflicting—requirements that fall within the scope of the Act and concern a slaughterhouse’s facilities or operations.”

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148 Petition for Writ of Certiorari, Nat’l Meat Ass’n v. Harris, 599 F.3d 1093 (No. 10-224).
149 Id. at i-ii.
152 Id. at *6. Justice Kagan began her analysis with by affirming that proposition that “[t]he FMIA’s preemption clause sweeps broadly.” No part of the opinion mentions or refers to the Ninth Circuit’s “strong presumption against preemption.” See Nat’l Meat Ass’n 599 F.3d at 1097.
153 Harris, 2012 U.S. LEXIS 1062, at *6. The Court further observed that it “is irrelevant . . . nothing in the federal Act requires what the state law forbids (or
extent that Section 599f created a set of circumstances “where under federal law a slaughterhouse may take one course of action . . . [and] under state law the slaughterhouse must take another” (emphasis added), it is expressly preempted by the FMIA. As such, the Court found that Section 599f’s prohibitions against processing and butchering as well as its euthanization requirement directly conflicted with the scheme intended by Congress and the Food Safety Inspection Service for the treatment of nonambulatory animals. Similarly, the FMIA preempted Section 599f where the California law regulated activity outside slaughterhouse “premises, facilities and operations” (purchasing, receiving, and selling) as the provisions nonetheless affect processes that are within the scope of the FMIA.

The Supreme Court also rejected the Cavel and Empacadora “type” argument that prevailed with the Ninth Circuit. Though novel in its treatment of nonambulatory animals as a category, the Ninth Circuit relied on a recent, sound line of case law suggesting that, with respect to state and local meat industry regulations, courts have duly acknowledged the limits of federal preemption. The FMIA notably permits the slaughter, sale, and receipt of equine meat, and yet Texas and Illinois have lawfully opted to prohibit the sale and processing of horsemeat from reaching human consumer markets. Section 599f’s prohibition appears to provide a close analogy in preventing the receipt of nonambulatory animals by slaughterhouses and their inclusion in meat sold for human consumption.

Nonetheless, the Supreme Court dismissed the Ninth Circuit’s conclusion that Section 599f merely “withdraws from slaughter animals that are unable to walk to their death.” Justice Kagan characterized the FMIA as reaching “not only ‘animals that are going to be turned into meat,’ but animals on a slaughterhouse’s premises that will never suffer that fate.” As a result, the Court’s analysis of permissible state regulation of meat production abandoned the Ninth Circuit’s concern for the power to determine which animals “are going to be turned into meat” in favor of an inquiry based

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154 Id. at *6.
155 Id. at *7.
156 Id. at *8–9.
157 Id. at *12.
158 Nat’l Meat Ass’n v. Brown, 599 F.3d 1093, 1099 (9th Cir. 2010).
159 Harris, 2012 U.S. LEXIS 1062, at *11–12.
on proximity to the slaughterhouse doors. The Court clarified that the FMIA and its regulations “apply throughout the time an animal is on a slaughterhouse’s premises from the moment a delivery truck pulls up to the gate.” In the Court’s view, because an animal could always become or cease to be nonambulatory while within control of the slaughterhouse, Section 599f could not be characterized as removing a type of animal from meat production. By contrast, the state laws at issue in *Cavel* and *Empacadora* identified categories of animals that could not “be delivered to, inspected at, or handled by a slaughterhouse, because [none of these animals] will be ordered for purchase in the first instance.”

Before the Supreme Court’s decision, it appeared that the Ninth Circuit’s decision in *National Meat Association* could have widespread effects on the future development of agricultural regulation, impacting areas such as environmental sustainability, animal welfare and public health. The question in the wake of the Supreme Court’s decision is: to what extent will states be able to regulate particular areas of food policy?. The answer remains unclear. The Supreme Court did not comment on the Ninth Circuit’s rejection of a species-wide basis limitation on the type doctrine. However, Justice Kagan’s opinion appears to limit the determination of a “type” to factors that are stable, unchanging and obvious enough to keep the covered animals from ever entering the “premises, facilities and operations” of a slaughterhouse. This conclusion suggests that room for state regulation may be considerably narrower than the Ninth Circuit envisioned.

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160 *Id.* at *12–13.
161 *Id.*
162 *Id.* at *13. The Court opined, “many nonambulatory pigs become disabled either in transit to or after arrival at a slaughterhouse. So even with §599f in effect, a swine slaughterhouse will encounter nonambulatory pigs. In that circumstance, §599f tells the slaughterhouse what to do with those animals . . . the statute thus reaches into the slaughterhouse’s facilities and affects its daily activities. And in so doing, the California law runs smack into the FMIA’s regulations.” *Id.* at *26.
163 *Id.*
164 *Id.* at *8–9.
Do you check your items at the grocery store for ingredients such as high-fructose corn syrup? What if, without warning, “high-fructose corn syrup” was suddenly replaced with the term “corn sugar”? Would you think that corn sugar is the same ingredient as the highly publicized high-fructose corn syrup? Buyers beware: the Corn Refiners Association (“CRA”), a national trade association representing the corn refining industry, has already begun the process of phasing out the term “high-fructose corn syrup” in favor of “corn sugar.”

On September 14, 2010, the CRA submitted a petition to the Food and Drug Administration (“FDA”) to rename high-fructose corn syrup (“HFCS”) “corn sugar.” If the FDA allows this name change, it could have detrimental effects on consumers, including those who have come to specifically associate HFCS with unhealthy eating and scour food labels to consciously avoid the ingredient.

Part I of this article discusses the origins of HFCS and traces the discovery of HFCS back to U.S. farm policy and the government’s subsidization of corn. Derived from corn, HFCS is a cheap alternative to sugar and has found its way into a vast amount of foods Americans consume on a daily basis. Part II explains how HFCS acquired its bad reputation and became linked to the obesity epidemic. This section also

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highlights research that has rebutted this finding, explaining that HFCS is no more harmful than sugar. Part III delves into the CRA’s campaign to rehabilitate HFCS’s bad reputation. Part IV lays out the arguments put forth in the CRA’s petition. Part V lists objections that may arise in response to the CRA’s petition and anticipates what the FDA’s response will be. Finally, Part VI discusses litigation that could arise if the FDA grants the CRA’s petition and outlines what such lawsuits against the FDA would look like.

I. THE ORIGINS OF HFCS: WHY DID IT BECOME SO POPULAR?

A. U.S. Farm Policy During the 1920s and 1930s

After World War I, a farm crisis ensued as farm prices fell and remained depressed throughout the 1930s. Congress passed the Agricultural Adjustment Act of 1933 (“AAA”) in an effort to ameliorate the crisis. The AAA radically changed U.S. farm policy and “emphasized acreage reduction as the best solution to the price problems of the producers of basic commodities,” including corn. The idea was that if farmers produced less, then prices would rise. Only those farmers who agreed to reduce production were afforded benefits under the AAA’s programs, including direct payments, also known as subsidies.

The Commodity Credit Corporation (“CCC”), signed into law by Franklin D. Roosevelt on October 17, 1933, was established to oversee programs aimed at providing loans to farmers and storing surplus crops. “[T]he CCC attempted to raise farm prices on storable commodities by removing the surplus from the market when prices fell below certain levels.” Program participants were eligible for secured loans, using the

6 Id.
7 Id.
8 Id.
9 Id. at 11. See also Cochrane & Ryan, supra note 3, at 23.
10 Dean, supra note 5, at 11.
commodities as collateral.\textsuperscript{11} Under this program, if the borrower did not reclaim the crop, the CCC “was obligated to keep the stored commodity in full satisfaction of the loan.”\textsuperscript{12} These early programs laid the foundation for the Farm Bill as we know it today.

\textbf{B. Modern U.S. Farm Policy}

The Food, Conservation, and Energy Act of 2008 (“Farm Bill”)\textsuperscript{13} continues the tradition of subsidizing corn production with direct payments\textsuperscript{14} and counter-cyclical payments.\textsuperscript{15} Direct payments are not associated with current production levels, but are based on past performance.\textsuperscript{16} Counter-cyclical payments, another type of benefit, allow eligible producers of corn, among other commodities, to receive payments when corn’s effective rate is less than the target price.\textsuperscript{17} The “effective rate” is either the sum of the direct payment and the loan rate for corn, or the market price for corn, whichever is higher.\textsuperscript{18} To provide further support for corn producers, the Farm Bill makes marketing assistance loans available.\textsuperscript{19} These loans allow a producer to use crops as collateral in exchange for a loan, and if the producer does not repay the loan within a set period of time, the government accepts the crops as payment for the loan.\textsuperscript{20}

The 2008 Farm Bill also introduced a new program, called the Average Crop Revenue Election (“ACRE”),\textsuperscript{21} which provides producers with guaranteed revenue each year based on market prices and average

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{11} \textit{Id.}
\item \textsuperscript{12} \textit{Id.}
\item \textsuperscript{14} \textit{Id.} § 8713.
\item \textsuperscript{15} \textit{Id.} § 8714.
\item \textsuperscript{16} Patricia L. Farnese, \textit{Remembering the Farmer in the Agriculture Policy and Obesity Debate}, 65 \textit{Food & Drug} L. J. 391, 392 (2010). \textit{See also} 7 U.S.C. § 8713.
\item \textsuperscript{18} \textit{Id.}
\item \textsuperscript{19} Average Crop Revenue Election, 7 U.S.C. § 8732 (2008).
\item \textsuperscript{20} Farnese, \textit{supra} note 16, at 392.
\item \textsuperscript{21} 7 U.S.C. § 8715.
\end{itemize}
\end{footnotesize}
yields for commodities such as corn. Those producers opting for ACRE do not receive counter-cyclical payments, but may still receive a reduced amount in direct payments and a lower rate in marketing assistance loans.

When Congress enacted the Farm Bill, the Congressional Budget Office ("CBO") estimated the total cost at $284 billion over five years and $604 billion over ten years. About 15 percent, or $42 billion, of this cost was expected to go to farm commodity support for 2008 to 2012.

Corn farmers are producing yields at unprecedented levels compared to previous years. In corn production, the yield per acre has increased 114 percent over the last four decades. In 1970, the United States produced 72 bushels of corn per acre. By 2008, this number had leaped to 154 bushels per acre. With such an increase in production, corn refiners are able to produce even more corn-based sweeteners. The amount of corn being converted into HFCS peaked beginning in the twenty-first century. From 2000 to 2006, corn refiners produced more than 500 million bushels of corn for HFCS. But, beginning in 2007, corn refiners’ production of corn for HFCS dropped to 490 million bushels. And in 2008, corn refiners actually produced 23.1 billion pounds of corn-based sweeteners.

23 Id.
25 Id. at 3.
27 One bushel is equivalent to eight gallons.
28 Lucas, supra note 26, at 3.
30 Id.
31 Audrae Erickson, Foreword, in Contributions from Corn Refining: Creating Jobs, Improving the Environment, and Strengthening
C. The Discovery of HFCS

In the late 1960s, Japanese chemists discovered how to make a high-fructose corn sweetener, transforming glucose into a sweeter molecule called fructose. At these beginning stages, the fructose content of the syrup was about fifteen percent. However, by the 1970s, the process of refining corn into fructose was perfected and higher-fructose-content syrup was introduced into the market. HFCS was six times sweeter than cane sugar. By the mid-1980s, HFCS became widely used in the U.S. soft drink industry.

The government’s subsidization of corn makes HFCS production cheaper than producing or importing sugar and, as a result, HFCS finds its way into a seemingly infinite number of foods. One study has shown that corn subsidies from U.S. farm policies made the consumer price of corn (and its byproducts) from 1997 to 2005 twenty-five to thirty percent below the cost of its production. As a cheap alternative, HFCS has “replaced cane and beet sugar in most sodas, candies, cookies, and sweet snack foods. Nearly all sweetened, processed foods manufactured in the United States now contain HFCS or cornstarch.”


34 Pollan, supra note 32, at 89.
36 CRA History, supra note 33.
38 J. Eric Oliver, Fat Politics: The Real Story Behind America’s Obesity Epidemic 129 (2006).
HFCS comes in formulations of forty-two and fifty-five percent.\textsuperscript{39} The remaining sugars are glucose and higher sugars.\textsuperscript{40} HFCS-55 is as sweet as sugar and is used in carbonated soft drinks in the United States.\textsuperscript{41} HFCS-42 is less sweet and is used in a variety of fruit-flavored noncarbonated drinks, baked goods, and other products.\textsuperscript{42}

HFCS consumption continues to increase as corn farmers continue to produce more corn that is refined into HFCS. In 1980, Americans consumed per capita a mere 13.5 pounds of HFCS per year,\textsuperscript{43} amounting to sixty-four calories per day.\textsuperscript{44} However, by 1995, Americans were consuming per capita an astounding forty-one pounds of HFCS per year,\textsuperscript{45} or 194 calories per day. HFCS consumption peaked in 2002, with Americans consuming 44.8 pounds of HFCS per capita per year at 212 calories per day.\textsuperscript{46} Concern about excessive HFCS consumption is reflected in a marked decrease in consumption in 2008. Americans reduced their consumption of HFCS in 2008 to 37.8 pounds per capita per year at 179 calories per day.\textsuperscript{47} Only time will tell if this decline will continue or if it was simply an anomaly.

II. THE DEMONIZATION OF HFCS

\textbf{A. HFCS Under Fire}

HFCS came under fire beginning in the late 1990s and was cited as having negative health effects and contributing to the U.S. obesity epidemic.\textsuperscript{48} As of January 2010, nearly thirty-four percent of adults and

\begin{itemize}
  \item \textsuperscript{40} Id.
  \item \textsuperscript{41} Id.
  \item \textsuperscript{42} Id.
  \item \textsuperscript{44} Id.
  \item \textsuperscript{45} Id.
  \item \textsuperscript{46} Id.
  \item \textsuperscript{47} Id.
  \item \textsuperscript{48} Critser, supra note 35, at 138.
\end{itemize}
seventeen percent of children are obese in the United States. From 1999 to 2000, it is estimated that, on average, males consumed 2,475 calories per day and females consumed 1,833 calories per day. For both genders, thirty-three percent of these calories came from fat. While the suggested daily allowance for oil and fats depends on age, gender, size, and level of activity (among other factors), the United States Department of Agriculture (“USDA”) recommends limited consumption.

Michael Pollan, author of The Omnivore’s Dilemma, writes that people point to a variety of explanations for America’s weight gain, but the answer is simply that Americans are consuming more calories, mostly in the form of corn. Because corn is a cheap commodity, “the cleverest thing to do with a bushel of corn is to refine it into thirty-three pounds of high-fructose corn syrup” because it gets people to eat through the corn surplus at a relatively cheap rate. While Americans are consuming more HFCS each year, they are not reducing their consumption of other sugars. Thus, the average person continues to increase caloric consumption, leading to higher rates of obesity.

HFCS has been pegged by some as a major culprit of the American obesity problem. Some researchers have proposed that the human body metabolizes HFCS differently than sugar. Unlike sucrose,
“fructose is selectively ‘shunted’ toward the liver; it does not go through some of the critical intermediary breakdown steps that sucrose does.”

The significance of this is that the liver uses fructose as a building block for triglycerides. Fructose essentially acts like insulin, causing the liver to release fatty acids into the bloodstream, which causes muscle tissue to develop insulin resistance. “Triglycerides are the chemical form in which most fat exists in food as well as in the body.” Having excessive levels of triglycerides is linked to the occurrence of coronary artery disease in some people. In 2000, researchers at the University of Toronto in Canada found that feeding Syrian golden hamsters a high-fructose diet caused the hamsters to develop high triglyceride levels and insulin resistance.

Fascination with HFCS and its effects continued into the twenty-first century, spurring further research. In 2004, three researchers investigated the relationship between HFCS consumption and the development of obesity. The study found that “the increase in consumption of HFCS has a temporal relation to the epidemic of obesity, and the overconsumption of HFCS in calorically sweetened beverages may play a role in the epidemic of obesity.” As in prior studies, the researchers asserted that fructose does not stimulate insulin secretion (also known as insulin resistance), which plays a role in regulating food intake and body weight.


58 Critser, supra note 35, at 136.
59 Id. at 137.
60 Id.
62 Id.
63 Critser, supra note 35, at 137.
65 Id. at 537.
66 Id. at 538.
67 See generally Miriam E. Bocarsly et al., High-Fructose Corn Syrup Causes Characteristics of Obesity in Rats: Increased Body Weight, Body Fat and Triglyceride
A Princeton University research team found that consumption of HFCS resulted in significantly more weight gain than consumption of table sugar.68 Rats that consumed HFCS gained much more weight than rats that consumed table sugar.69 Furthermore, rats that had diets rich in HFCS, over the course of six months, gained forty-eight percent more weight than those on normal diets.70 Similarly, an article in the Journal of the American Society of Nephrology suggests that a high-fructose diet, consisting of a high intake of both sucrose and HFCS, correlates with the rising prevalence of high blood pressure, diabetes, obesity, and chronic kidney disease.71 Based on their research, the authors state that they “suggest excessive fructose intake should be considered an environmental toxin with major health implications.”72

B. Food Producers’ Response to Negative Sentiment Surrounding HFCS

In response to the negative publicity surrounding HFCS, food manufacturers have responded to consumer concerns about the use of HFCS in foods. As a selling point, many manufacturers now advertise their products as free of HFCS. Snapple replaced HFCS with cane sugar even after the FDA approved the use of “natural” on labels of products containing HFCS.73 In June 2009, Starbucks began selling baked goods without HFCS to appeal to health-conscious consumers.74 Kraft Foods, Inc. eliminated using HFCS in Wheat Thins and opted for sugar in

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68 Parker, supra note 67.
69 Id.
70 Id.
72 Id.
response to consumer preferences.\footnote{High Fructose Corn Syrup Losing Ground, Food Chem. News, Mar. 15, 2010, at 31.} Similarly, ConAgra Foods, Inc. replaced HFCS with sugar in its Hunt’s tomato ketchup.\footnote{Id.} On August 16, 2010, Sara Lee announced that it would remove HFCS from some of its bread lines at customers’ requests.\footnote{Nix to High Fructose Corn Syrup, Food Chem. News, Aug. 23, 2010, at 4.} With prominent manufacturers opting for sugar over HFCS, HFCS sales, and thus corn sales, have decreased. U.S. sales of HFCS for three corn refiners were down nine percent in 2009 from 2007, and refiners anticipated a further decline in 2010.\footnote{Melanie Warner, For Corn Syrup, the Sweet Talk Gets Harder, N.Y. Times (May 1, 2010), http://www.nytimes.com/2010/05/02/business/02syrup.html.}

C. Studies Challenging Claims About the Negative Effects of HFCS

The CRA argues that the prevalence of obesity has more to do with what and how much Americans consume generally, rather than solely with the consumption of HFCS. Although a number of studies have highlighted the negative effects of HFCS, other reports have endorsed the CRA’s contention that HFCS is no more harmful than pure cane sugar.\footnote{Richard A. Forshee et al., A Critical Examination of the Evidence Relating High Fructose Corn Syrup and Weight Gain, 47 CRITICAL REV. FOOD SCI. & NUTRITION 561, 561 (2007) (observing that HFCS does not appear to contribute to overweightness and obesity any differently than do other energy sources); Kathleen J. Melanson et al., Effects of High-Fructose Corn Syrup and Sucrose Consumption on Circulating Glucose, Insulin, Leptin, and Ghrelin and on Appetite in Normal-Weight Women, 23 NUTRITION 103, 103 (2007) (finding that when fructose is consumed in the form of HFCS, measured metabolic responses do not differ from sucrose in lean women); Marilyn Schorin, High Fructose Corn Syrups, Part 2: Health Effects, 41 NUTRITION TODAY 70, 75 (2006) (arguing that current evidence does not support claims of HFCS having a unique effect on health); Marilyn Schorin, High Fructose Corn Syrups, Part 1: Composition, Consumption, and Metabolism, 40 NUTRITION TODAY 248, 248 (2005) (arguing that HFCS in foods has similar composition and sweetness to sucrose, and absorption and metabolism of HFCS is similar to that of sucrose).} Some studies claim that the role of HFCS consumption on health needs...
to be examined, but also point to Americans’ general increased sugar consumption as contributing equally to American obesity.\textsuperscript{80}

For example, one 2008 study went beyond the confines of sweetened beverages and focused on consumption of HFCS and other added caloric sweeteners in foods and beverages.\textsuperscript{81} Researchers found that, over the last three decades, the availability and consumption of HFCS and added sugar has increased.\textsuperscript{82} While noting the significance of an increased intake of calories from HFCS, the study emphasized the equal importance of overall trends in added caloric sweeteners (in other words, general sugar consumption).\textsuperscript{83} Similarly, in June 2008, the American Medical Association (“AMA”) announced that HFCS “does not appear to contribute more to obesity than other caloric sweeteners,” but that further research had to be done on HFCS’s health effects.\textsuperscript{84}

III. Manufacturers’ Attempts to Rehabilitate a Bad Reputation

A. The CRA’s Campaign

Beginning in June 2008, the CRA launched an aggressive campaign, spending millions to rehabilitate HFCS’s bad reputation.\textsuperscript{85} The ongoing campaign focuses on consumers ages twenty-five and older, focusing particularly on mothers.\textsuperscript{86} In addition to its FDA petition, the CRA’s campaign includes magazine, newspaper, television, and website

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\textsuperscript{80} See Duffey & Popkin, supra note 37, at 1722S.

\textsuperscript{81} Id.

\textsuperscript{82} Id. at 1730S.

\textsuperscript{83} Id. at 1722S, 1731S.


advertisements targeted at mothers. Its website includes the headline, “The Facts About High Fructose Corn Syrup,” and presents favorable facts promoting HFCS’s benefits. A portion of the website emphasizes recent studies that have found HFCS to be similar to sugar, resulting in similar effects, and thus no more harmful than table sugar. The CRA relies heavily on studies and comments by nutrition experts. For example, the CRA campaign highlights the opinion of New York University Professor Marion Nestle, who “thinks the plural ‘corn sugars’ is a better description of high-fructose corn syrup, which is actually a mixture of glucose and fructose.” Michael Jacobson, executive director of the Center for Science in the Public Interest said, “I don’t know if ‘corn sugar’ is the best term, but it’s better than ‘high-fructose corn syrup.”

B. Renaming Products that Have Already Acquired Meaning

The CRA points to two instances where products already in the marketplace have been renamed successfully. The first example is low erucic acid rapeseed oil, which was changed to canola oil in 1988. The second example is prunes, rebranded as dried plums in 2000.

It does not appear that these two name changes resulted in lawsuits; however, neither product, nor its new name, was as controversial as HFCS. Additionally, both canola oil and dried plums are products that are visible to consumers at the point of sale; in other words, when a consumer looks for prunes, and comes upon a package that describes the product as “dried plums,” the consumer can likely discern that the product is the same as before. This is not the case for HFCS, which is an ingredient used in a multitude of foods and is merely listed as one of many ingredients on a product’s packaging. Changing HFCS to corn

90 Id.
91 Emily Fredrix, It’s High Fructose Corn Syrup by Another Name, Wash. Post, Sept. 15, 2010, at A6. See also CRA Citizen Petition, supra note 2, at 8.
92 Fredrix, supra note 91. See also CRA Citizen Petition, supra note 2, at 8.
sugar would change the ingredient as it is currently listed on packages, likely making it harder for consumers to discern if food manufacturers use HFCS in their products. Consumers may not draw the connection that HFCS and corn sugar are the same ingredient; instead, consumers might simply believe that the product no longer contains HFCS.

According to the CRA, two-thirds of household shoppers are aware of HFCS.93 Many of these shoppers may consciously avoid purchasing products that contain HFCS, and may be harmed if the CRA is allowed to change HFCS’s name.

IV. THE CRA’S CASE FOR ALLOWING THE NAME CHANGE

The CRA’s central argument is that consumers are confused and misled by the name “HFCS.”94 The CRA maintains that the name HFCS is an inaccurate description of the ingredient, and that corn sugar is, in fact, a more accurate description.95 “High-fructose” is misleading to consumers because, in terms of its composition, HFCS is not higher in fructose than other sweeteners.96 The CRA believes that allowing a name change “would promote honesty and fair dealing in the interest of consumers.”97

The CRA points out that HFCS and sugar98 are substantially similar in that both have equivalent ratios of fructose and glucose.99 “The only practical distinction in composition between high-fructose corn syrup and sugar is that in sucrose, fructose and glucose are chemically bonded together, while in high-fructose corn syrup, the glucose and fructose are a simple mixture.”100 In its petition, the CRA highlights the similarities between HFCS and sugar: (1) both have the same number of calories per gram, (2) both are simple carbohydrates that contribute about

94 CRA Citizen Petition, supra note 2, at 2.
95 Id.
96 Id.
97 Id.
98 Sugar, or sucrose, is composed of fifty percent glucose and fifty percent fructose. Id. (citing John S. White, Straight Talk About High-Fructose Corn Syrup: What It Is and What It Ain’t, 88 AM. J. CLINICAL NUTRITION 1716S (2008)).
99 CRA Citizen Petition, supra note 2, at 2.
100 Id. at 3.
four kcal/g, (3) both have the same level of sweetness, and (4) both HFCS and fructose are metabolized the same way in the body.¹⁰¹

The MSR Group, a market research company, conducted a consumer research study in 2010 on behalf of the CRA. The Group concluded that “(1) consumers incorrectly perceive that high fructose corn syrup is significantly higher in calories, fructose and sweetness than sugar, and (2) the term ‘corn sugar’ more accurately reflects the actual properties of high fructose corn syrup than its current name.”¹⁰² This is the thrust of the CRA’s argument.

Some experts agree with the CRA’s claims that HFCS and sugar are substantially similar. New York University Professor Marion Nestle stated, “[T]here is no meaningful biochemical difference between table sugar and high-fructose corn syrup.”¹⁰³ Michael Jacobson, executive director of the health advocacy group Center for Science in the Public Interest, said, “Sugar and high-fructose corn syrup are nutritionally the same.”¹⁰⁴

The CRA concludes its petition by arguing that renaming HFCS as corn sugar would comply with the FDA’s common or usual name regulation, which states that “the common or usual name of a food, which may be a coined term, shall accurately identify or describe, in as simple and direct terms as possible, the basic nature of the food or its characterizing properties or ingredients.”¹⁰⁵ Here, the name “corn sugar” tells a consumer that the food source is corn, that the basic nature of the product is sugar, and that the product functions as a sweetener.¹⁰⁶

¹⁰¹ Id. at 2-3.
¹⁰² Id. at 5.
¹⁰³ Parker-Pope, supra note 89.
¹⁰⁴ Id.
¹⁰⁵ CRA Citizen Petition, supra note 2, at 7 (citing 21 C.F.R. § 102.5(a)).
¹⁰⁶ Id.
V. Objections Against Allowing the Name Change, and the FDA’s Likely Response

A. Public Comments

When a petition is submitted to the FDA, the public is allowed to submit comments to influence the FDA’s response.107 As of January 13, 2011, more than sixty people, including the general public, academics, and professionals, have posted comments.108 The majority of the comments express dissatisfaction with allowing the CRA to rename HFCS as corn sugar.109

Rick Danger, a consumer, commented, “Changing the name would add to consumer confusion and serve no useful purpose. Furthermore, the name change itself would incur costs that would be passed on to consumers.”110 Similarly, Bob Peterson, listing himself as associated with the Vermont State Health Department, said, “Now that the public is becoming aware of the impact on health, the large scale HFCS producers are trying to change the name simply to deceive the public.”111

On the other end of the spectrum are those in support of the name change. Fred Yoder, associated with the National Corn Growers Association, posted, “Why not label the product simply as what it is – sugar from corn. The real information a consumer can use is what the product is, and where it has come from.”112 Neva Cochran, a registered dietitian and nutrition professional who supports the name change, said, “By clarifying the name so people understand it is simply sugar made

107 Comment on Regulations, U.S. Food & Drug Admin., http://www.fda.gov/AboutFDA/ContactFDA/CommentonRegulations (last updated Feb. 7, 2008) [hereinafter FDA Comment].
109 Id.
110 Rick Danger, Comment on CRA’s Citizen Petition, FDA-2010-P-0491-0051, Oct. 27, 2010.
111 Bob Peterson, Comment on CRA’s Citizen Petition, FDA-2010-P-0491-0052, Oct. 27, 2010.
112 Frank Yoder, Comment on CRA’s Citizen Petition, FDA-2010-P-0491-0054, Oct. 27, 2010.
from corn, maybe we can move on from blaming HFCS for a plethora of health problems . . .”

B. HFCS as an Identifier in the Marketplace

Since HFCS gained notoriety in the 1990s, it has become an identifier in the marketplace. Some consumers consciously avoid products with HFCS and purchase groceries based on the presence of HFCS in food. If the CRA is allowed to change “HFCS” to “corn sugar,” these consumers, as well as the average consumer, may not realize products containing “corn sugar” actually contain an ingredient they are attempting to avoid.

Corn sugar, which the CRA argues is a more accurate description, is a benign and neutral term that takes on a connotation of being natural and unprocessed. However, HFCS is made “by soaking corn kernels to extract corn starch, and using enzymes to turn the glucose in the starch into fructose.” Even though the FDA has allowed the use of the term “natural” with HFCS, it is clear that HFCS is not naturally occurring in the environment, requiring treatment by enzymes and acids; refinement in filters, centrifuges, and ion-exchange columns; and processing to reach the final product. The CRA’s main argument rests upon the premise that the name HFCS causes confusion; however, the new name it proposes to replace HFCS with stands to cause further consumer confusion.

113 Neva Cochran, Comment on CRA’s Citizen Petition, FDA-2010-P-0491-0066, Dec. 23, 2010.
114 See Fredrix, supra note 91. See also CRA Citizen Petition, supra note 2, at 8.
115 While it is reasonable to anticipate that health-conscious consumers may hear about the name change through news outlets or by word of mouth, many American consumers will remain unaware of the name change.
116 Parker-Pope, supra note 89.
In weighing whether to allow the name change, the FDA will have to conclude either that the change will cause minimal harm to consumers or that the harm will dissipate over time.

C. The FDA’s Anticipated Response

The petition process can take anywhere from “several weeks to more than a year.”\textsuperscript{119} In this case, news reports speculate that the CRA’s petition could take up to two years.\textsuperscript{120} Based on the conflicting evidence regarding the consumption of HFCS and its effects, it is unclear how the FDA will respond to the CRA’s petition. Created in 1906,\textsuperscript{121} the FDA is responsible for “protecting . . . [and] advancing the public health,” and “helping the public get the accurate, science-based information they need to use medicines and foods . . . .”\textsuperscript{122} Here, the FDA is faced with the daunting task of weighing the costs and benefits in an area where ample evidence supports both sides. However, it is clear that if the FDA allows the name change, it will cause consumer confusion, and this may be the factor that pushes the FDA to reject the CRA’s petition.

VI. The Potential Consequences of Renaming HFCS

In addition to general displeasure from consumers if the FDA allows the CRA to change HFCS to corn sugar, there is also the potential for litigation. Consumers who have come to recognize and avoid HFCS, as well as interest groups and sugar producers, will likely disapprove of the new, more benign name, and could challenge an FDA approval through lawsuits.

\begin{itemize}
\item \textsuperscript{119} FDA Comment, \textit{supra} note 107.
\item \textsuperscript{121} \textit{History}, U.S. Food & Drug Admin., http://www.fda.gov/AboutFDA/WhatWeDo/History (last updated July 29, 2010).
\item \textsuperscript{122} \textit{Centers & Offices}, U.S. Food & Drug Admin., http://www.fda.gov/AboutFDA/CentersOffices/default.htm (last visited Feb. 15, 2011).
\end{itemize}
If the FDA approves the CRA’s request, it will have to revise the current Generally Recognized As Safe (“GRAS”) regulation for HFCS,\(^{123}\) and place an announcement in the Federal Register, which opens up a comment period. The comment period usually lasts for sixty to ninety days.\(^{124}\) After considering the comments, the FDA will issue a final rule and publish it in the Federal Register.\(^{125}\) Before the final rule can be enforced, the FDA must allow for sixty days from the date of publication in the Federal Register.\(^{126}\) Once the final rule becomes enforceable, third parties can then petition the FDA to reconsider\(^ {127}\) or to stay\(^ {128}\) the decision; if those petitions fail, parties may turn to the courts.\(^ {129}\)

If a plaintiff exhausts these administrative remedies and makes it past other hurdles (such as standing, mootness, and ripeness), a court will apply an “arbitrary and capricious” standard to the FDA’s actions.\(^ {130}\) The Supreme Court articulated this standard in *Motor Vehicle Manufacturers Ass’n v. State Farm Mutual Automobile Insurance Co.*\(^ {131}\) In that case, the Court stated that, while “the scope of review under the arbitrary and capricious standard is narrow, . . . [an] agency must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.”\(^ {132}\) A court will then “consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment.”\(^ {133}\) Given the deference courts afford agencies,

\(^{123}\) 21 C.F.R. § 184.1866 (2010).
\(^{124}\) James T. O’Reilly, 1 Food & Drug Admin. § 4:4, 4-22 – 4-23 (3d ed. 2010).
\(^{125}\) Id.
\(^{126}\) Id.
\(^{128}\) Id. § 10.35.
\(^{129}\) Id. § 10.45.
\(^{130}\) O’Reilly, supra note 124, § 4:11 at 4-49 (citing 5 U.S.C. § 706(2)(A)).
\(^{132}\) Id. at 43 (internal quotation omitted) (citing Burlington Truck Lines, Inc. v. United States, 371 U.S. 156 (1962)).
\(^{133}\) Id. (internal punctuation omitted) (quoting Bowman Transp., Inc. v. Ark.-Best Freight Sys., Inc., 419 U.S. 281, 285 (1974); Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 416 (1971)). The Court lists examples of when an agency rule has been arbitrary and capricious: [I]f the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible
winning a case against the FDA is an uphill battle, but the FDA is not immune to losing.

As one potential argument, the plaintiffs in a lawsuit against the FDA could assert that the FDA’s approval of a name change is in violation of Section 401 of the Federal Food, Drug, and Cosmetic Act (“FDCA”), which sets forth the definitions and standards for food. Section 401 of the FDCA states in part:

Whenever in the judgment of the Secretary such action will promote honesty and fair dealing in the interest of consumers, he shall promulgate regulations fixing and establishing for any food, under its common or usual name so far as practicable, a reasonable definition and standard of identity, a reasonable standard of quality, or reasonable standards of fill of container.

The argument follows that the FDA’s decision to revise the GRAS affirmation regulation for HFCS is in contradiction to the Secretary of Health and Human Services’ duty to promulgate regulations that “will promote honesty and fair dealing in the interest of consumers,” because the change to corn sugar is misleading and will cause consumer confusion about the ingredient. While other potential arguments exist for bringing a claim against the FDA, this is what one potential argument might be in a lawsuit against the FDA.

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that it could not be ascribed to a difference in view or the product of agency expertise. *Id.*

134 *See O’Reilly, supra* note 124, § 4:12.


137 *Id.*
CONCLUSION

For better or worse, HFCS has made its way into the American diet and will likely remain in many foods as an inexpensive alternative to sugar. Some food producers have consciously chosen sugar over HFCS, but this will not be the case for many of the food products Americans consume on a daily basis. Given that HFCS is not likely to be voluntarily phased out by food manufacturers, it is important that HFCS remains visible to consumers in the marketplace. Despite all of the CRA’s arguments, ranging from the possible technical inaccuracy of using HFCS as a name to describe its product to challenges of the alleged effects of HFCS, allowing the CRA to change HFCS to corn sugar will obscure the ingredient’s identity in an ingredient list.

In the public lexicon, HFCS has acquired a separate, specific meaning, causing some consumers to scan food labels for the ingredient and to avoid purchasing foods that contain HFCS. Whether or not their perceptions about the ingredient are correct or scientifically proven, consumers still have a right to know what is in their food and a right to choose whether they want to consume foods containing HFCS. A simple name change is unlikely to change a consumer’s mind about HFCS, but is likely to cause confusion.
Masquerading Behind Words: The Corn Refiners Association’s Push to Rename High-Fructose Corn Syrup as “Corn Sugar”