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Weird Science: Frankenstein Foods and States as Laboratories of Democracy

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WEIRD SCIENCE:
FRANKENSTEIN FOODS AND STATES AS
LABORATORIES OF DEMOCRACY

JENNIFER MCGEE, J.D.*

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WEIRD SCIENCE: FRANKENSTEIN FOODS AND STATES AS LABORATORIES OF DEMOCRACY

I. INTRODUCTION

Imagine implanting fish genes into strawberries and tomatoes to protect their fruit from freezing, or injecting bacteria into corn so the plant kills and wards off insects. Imagine injecting synthetic growth hormones into salmon so that they can grow larger, or into dairy cows so that they can produce more milk. This isn't science-fiction.¹ These techniques, and others like them, are already being used across the United States.² Genetic engineering involves combining two unrelated species that could not reproduce in nature and uses complex techniques to combine their genes forcefully.³ What could go wrong?

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¹ Those leery of these techniques have referred to these products as Frankenstein foods because scientists are “genetically modifying plants . . . by adding artificial sections of genetic code to existing plants in order to give the plants characteristics they would not otherwise have.” David E. Sella-Villa, *Gently Modified Operations: How Environmental Concerns Addressed Through Customs Procedures Can Successfully Resolve the Us-Eu Gmo Dispute*, 33 WM. & MARY ENVTL. L. & POL’Y REV. 971, 976 (2009). It conjures an image of Mary Shelley’s Dr. Frankenstein using various body parts from cadavers to piece together his monster. MARY SHELLEY, FRANKENSTEIN (1818).

² In 1992, the Flavr Savr tomato became the first genetically modified food approved by the FDA. J. H. Maryanski, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, *FDA’S Policy for Foods Developed by Biotechnology*, in , Engel, Takeoka, and Teranishi, GENETICALLY MODIFIED FOODS: SAFETY ISSUES Editors, American Chemical Society, Symposium Series No. 605, Chapter 2, pp 12-22, 1995, 1995 WL 17210964, at *7. The tomato, “derived from *Agrobacterium tumefaciens*, *E. coli*, cauliflower mosaic virus, and tomato,” was engineered to ripen on the vine longer for enhanced flavor. *Id.* In 1998, the EPA approved StarLink corn, “genetically engineered to express the protein Cry9C, which is toxic within the alkaline digestive tract of certain insects, including corn borers, but not within the acidic digestive tract of humans.” Peter L. Resnik, Emily E. Smith-Lee, Sana Abdullah, *Food Fights Genetically Modified Food and the Law*, Summer 2007 A.B.A. Vol. 6 Num. 4.

³ The World Health Organization (“WHO”) defines genetically modified organisms (“GMOs”) as “organisms in which the genetic material (DNA) has been altered in a way that does not occur naturally.” Harrison Joss, *The Rise of Frankenbeer: A Holistic Analysis on International Labeling and Beverage Laws Through the Lens of the Ongoing Controversy of Genetically Modified Organisms*, 21 ILSA J. INT’L & COMP. L. 131, 133 (2014). “[C]urrently available technologies now permit the transfer of genes among completely unrelated species.” *Id.* Throughout this Article, there are two adjectives used interchangeably to describe GMOs: genetically engineered (“GE”) and genetically modified (“GM”).

The truth is that no one really knows.⁴ *Jurassic Park*, a science-fiction novel written by Michael Crichton, is a cautionary tale of the unconsidered broader consequences of biological tampering and so called “playing god.”⁵ In the novel, an entrepreneur uses advanced biological engineering techniques to breed extinct plants and animals in a laboratory.⁶ For those who have not had the pleasure of reading the novel – spoiler alert – it doesn’t end well! The scientists fail to consider the broader consequences of fusing modern amphibian DNA with prehistoric dinosaur DNA and lose control of their biological experiment.⁷

Similar to the entrepreneur of *Jurassic Park*, the United States eagerly jumped aboard the metaphoric GMO-train.⁸ Proponents of genetically modified organisms (“GMOs”) say that scientific evidence proves that the technology is safe and GMO products are substantially the same as non-GMO products, although, one could effectively argue that it is too soon, if even possible, to determine that fact definitively.⁹

⁴ This concept touches on a concern of many GMO opponents known as chaos theory. See generally Daniel A. Farber, *Probabilities Behaving Badly: Complexity Theory and Environmental Uncertainty*, 37 U.C. DAVIS L. REV. 145, 149-50 (2003) (discussing chaos theory otherwise known as complexity theory); see also *infra* note 5 (defining chaos theory).

⁵ MICHAEL CRICHTON, *JURASSIC PARK* (1990). Chaos theory, a primary theme of *Jurassic Park*, purports that even simple systems engage in complex and highly unpredictable behavior. *Williams v. Crichton*, 84 F.3d 581 (2d Cir. 1996). In other words, it is impossible to predict the long term consequences of fusing DNA from two unrelated species.

⁶ CRICHTON, *supra* note 5.

⁷ In the novel, scientists engineered their dinosaur population to be exclusively female to prevent breeding. *Id.* However, the modern DNA ultimately allowed the creatures to change sexes because certain frogs can spontaneously change their gender when in a same-sex environment. *Id.* In a classic example of life imitating art, the scientists responsible for creating the first bioengineered animal approved for human consumption had the same idea. Julie Steenhuisen & Tom Polansek, *U.S. Clears Genetically Modified Salmon for Human Consumption*, REUTERS, Nov. 19, 2015, available at <http://www.reuters.com/article/2015/11/20/us-aquabounty-technologies-fda-idUSKCN0T826T20151120#VmLcUTvofyDFMKMC.97> (“All of the fish will be female, and reproductively sterile, to prevent inadvertent breeding of the genetically modified fish with wild salmon, FDA officials said.”)

⁸ The federal government began issuing policy statements regarding the emerging technology as early as the 1980s. Alison Peck, *The New Imperialism: Toward an Advocacy Strategy for Gmo Accountability*, 21 GEO. INT’L ENVTL. L. REV. 37, 49 (2008); see also *infra* text accompanying note 28..

⁹ See *supra* notes 4-7 and accompanying text. Only time will tell if GMOs are safe for our environment and health. One of the unforeseen side effect of Roundup resistant crops is the effect that the increased use of herbicides has on insect populations. George A. Kimbrell, Aurora L. Paulsen, *The Constitutionality of State-Mandated Labeling for Genetically Engineered Foods: A Definitive Defense*, 39 VT. L. REV. 341, 354 (2014). In December 2014, the US Fish and Wildlife Service announced it would conduct a study to examine the dramatic reduction in the monarch butterfly population. Pam Radtke Russell, *Agency Takes Up Petition to List Monarch Butterfly*, CQ ROLL CALL WASHINGTON ENERGY BRIEFING, Dec. 30, 2014, available at 2014 WL 7384778. It is estimated that there has been more than a ninety percent

The federal government takes a proactive approach, relying on industry data to determine that GMOs are safe, however, there have been several instances throughout history when the national government has been criticized for failing to consider the broader, long-term effects of proposed legislation and scientific studies.¹⁰

In the 1940s, the federal government deemed pesticides such as DDT¹¹ safe for wide-spread commercial use and even coined it a “miracle chemical.”¹² Twenty years later, States were only able to ban the substance once legislators proved the harmful side effects to fish and

decline over the last twenty years. *Id.* Coincidence or not, the FDA classified GMOs as generally regarded as safe (“GRAS”) about the same time that the butterfly population began to decline. *See infra* text accompanying notes 51-52. Those pushing the study argue that the dramatic loss is caused by crops genetically engineered to be resistant to Monsanto’s Roundup herbicide. Russell, *supra*. The herbicide is particularly lethal to milkweed plants which are the monarch caterpillar’s only food source. *Id.* In March 2015, the “EPA announced it would crack down on Roundup use by requiring Monsanto to formulate a plan to limit the development of weeds resistant to the product.” Daniel Boom, *EPA Butterfly Plan Excludes Pesticide Restriction*, CQ ROLL CALL WASHINGTON ENERGY BRIEFING (2015), available at 2015 WL 3897874. When the EPA released its plan for protecting the butterflies in June 2015, however, it declined to include the reduction of Roundup in its proposal. *Id.*

¹⁰ Under a proactionary approach, in the absence of proof that a technology is unsafe, its use is ok. Thomas H. Murray, Ph.D., *What Synthetic Genomes Mean for Our Future: Technology, Ethics, and Law, Interests and Identities*, 45 VAL. U. L. REV. 1315, 1329 (2011). In contrast, a precautionary approach advocates implementing preventative measures in areas of uncertainty even in the absence of conclusive scientific evidence that harms will occur. *Id.* In 1992, relying on data from GMO manufacturers, the FDA “[d]etermined genetically modified foods are not substantially different than nongenetically modified foods.” Julie M. Muller, *Naturally Misleading: Fda’s Unwillingness to Define “Natural” & the Quest for Gmo Transparency Through State Mandatory Labeling Initiatives*, 48 SUFFOLK U.L. REV. 511, 519 (2015). In the absence of scientific proof, their proactionary policies were based largely on political assumptions favorable to the biotech industry. Peck, *supra* note 8, at 48.

¹¹ DDT stands for “dichlorodiphenyltrichloroethane.” DAVID M. WHITACRE AND KRISTIN R. EADS, *DEFENDING PESTICIDES IN LITIG.* § 1:3 (2015) (defined in nt. 27). Its use as a powerful insecticide was discovered in 1939 by Dr. Paul Müller, a Swiss entomologist. *Id.* In 1948, Dr. Müller was awarded the Nobel Prize in Physiology or Medicine because of DDT’s life-saving capabilities. *See* David L. Mulliken, Jennifer D. Zambone & Christine G. Rolph, *DDT: A Persistent Lifesaver*, Nat. Resources & Env’t, Spring 2005, at 3, 4 (discussing DDT’s use in combatting malaria and other insect-borne diseases). It is estimated that “between 1945 and 1970, DDT saved tens of millions of lives around the world.” It is worth noting, however, that “even as DDT was earning Müller his Nobel Prize and the years of its massive production were beginning, there was already evidence that it caused liver damage at high dosages and measurable reproductive problems in laboratory rats.” WHITACRE ET AL., *supra*.

¹² “Ironically, the miracle chemical that had driven the pesticide revolution, DDT, also drove the controversy that spawned the reform movement.” WHITACRE ET AL. *supra* note 11. “First introduced in the 1930s and eventually banned [nationally] in the early 1970s, the pesticide DDT starkly illustrates the meteoric rise of a pesticide based on significant economic and human health benefits and the subsequent dramatic fall based on severe ecological and human health risks.” Mary Jane Angelo, *Embracing Uncertainty, Complexity, and Change: An Eco-Pragmatic Reinvention of A First-Generation Environmental Law*, 33 ECOLOGY L.Q. 105, 155 (2006).

bird populations caused by water contamination.¹³ In the 1990s, the Federal government approved injecting rBST¹⁴ into dairy cows to increase milk production.¹⁵ Conflicting evidence has recently surfaced, however, showing that its use increases the amount of antibiotics present in the foods Americans consume.¹⁶

The key difference between these techniques and modifying DNA is that farmers are able to stop using these methods once any dangers are discovered.¹⁷ Altering species' DNA is different because GMO plants are able to produce seeds that cross pollinate with other non-GMO plant varieties.¹⁸ Once these genetically engineered ("GE") plants are introduced into the environment, it would be all but impossible to eradicate them completely.¹⁹ Farmers can stop spraying their plants or

¹³ BILL BERRY, *BANNING DDT: HOW CITIZEN ACTIVISTS IN WISCONSIN LED THE WAY*, Madison, WI, USA: Wisconsin History Society Press, 2014.

¹⁴ Recombinant Bovine Growth Hormone is the synthetic version a hormone that naturally occurs in cows created in a laboratory by Monsanto scientists and approved for commercial use by the FDA in 1993. Christina Cusimano, *Rbst, It Does A Body Good?: Rbst Labeling and the Federal Denial of Consumers' Right to Know*, 48 SANTA CLARA L. REV. 1095, 1098 (2008); see also *infra* note 113 (discussing the biotech corporation Monsanto).

¹⁵ Cusimano, *supra* note 14, at 1098 ("Once injected, rBST is carried to the cow's liver where it stimulates production of Insulin-like Growth Factor . . . which then stimulates milk production.").

¹⁶ *Id.* This can result in overexposure which increases the danger of so-called "super bacteria" becoming resistant to antibiotics. *Id.* In addition to the health concerns raised by rBST, there are ethical implications that should be considered as well. See Anastasia S. Stathopoulos, *You Are What Your Food Eats: How Regulation of Factory Farm Conditions Could Improve Human Health and Animal Welfare Alike*, 13 N.Y.U. J. LEGIS. & PUB. POL'Y 407, 420 (2010) ("Studies have found that cows treated with [rBST] are significantly more likely to develop crippling health problems, including lameness, udder infections, and reproductive issues such as infertility and birth defects.").

¹⁷ Compare Amie Jamieson, *Will Bald Eagles Remain Compelling Enough to Validate the Bald and Golden Eagle Protection Act After Esa Delisting? The Ninth Circuit's Analysis in United States v. Antoine*, 34 ENVTL. L. 929, 933 (2004) (noting the rebound of Bald Eagle population following DDT ban) with Kimbrell & Paulsen, *supra* note 9, at 356 (discussing irreparable harm caused by transgenic contamination).

¹⁸ *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, 718 F.3d 1350, 1357 (Fed. Cir. 2013), 134 S. Ct. 901, 187 L. Ed. 2d 776 (2014) (citing *Monsanto Co. v. Geertson Seed Farms*, 561 U.S. 139, 148 (2010)) ("[T]he Supreme Court recently recognized that there is a risk of 'gene flow' from genetically modified crops into conventional crops."). "[T]ransgenic contamination--the unintended, undesired presence of transgenic material in organic or conventional (non-genetically engineered) crops, as well as wild plants . . . happens through, among other means, wind or insect pollen drift, seed mixing, faulty or negligent containment, and weather events." Kimbrell & Paulsen, *supra* note 9, at 356.

¹⁹ "[T]he escape of transgenes into wild or feral plant populations is, in most cases, irreparable. Oregon, for example, continues the Sisyphean task of trying to find and destroy feral populations of Monsanto's 'Roundup Ready' genetically engineered bentgrass that escaped field trials in that state over a decade ago." Kimbrell & Paulsen, *supra* note 9, at 357. Additionally, one recent study identified GMO genes in wild cotton populations in Mexico. Brief for Plaintiffs-Appellants, at 14, *Grocery Mfrs. Ass'n v. Sorrell*, 102 F.Supp.3d 583, 612

stop injecting their cows²⁰; however, realistically, they cannot prevent pollination, making cross-pollination inevitable.²¹

Due to concerns like these and many others, a majority of Americans support GMO disclosure.²² After the federal government refused to mandate GMO labeling on a national level,²³ several States reacted by passing their own legislation.²⁴ The State laws were in large part a response to conflicting scientific reports that suggest that GMOs may not be as safe as their proponents argue.²⁵ To counter these local legislation efforts, lobbyists pressured legislators at the federal level to pass a law prohibiting State labeling requirements.²⁶ Most recently, this was in the form of the National Bioengineered Food Disclosure Standard (“the National Standard”) which was signed into law July 29, 2016.²⁷

This Article analyzes the National Standard and posits that Vermont’s Act 120 was a more effective labeling law because it safeguarded consumer sovereignty. The State regulatory scheme in place prior to the passage of the National Standard satisfied consumer demand for disclosure while allowing for necessary experimentation

(D. Vt. 2015) (No. 15-1504), 2015 WL 5168440 (C.A.2) at *14. Unapproved GMOs are already irreparably effecting our environment. See Kyndra A. Lundquist, *Unapproved Genetically Modified Corn: It's What's for Dinner*, 100 IOWA L. REV. 825, at nt. 4 (2015) (“If a product is being ‘field tested’ or is in the ‘field trial’ stage, the product is being planted outdoors to allow the company to gather initial planting data. However, it has not yet been approved for sale, so it can still be considered experimental.”).

²⁰ Christopher Kanter, Kent D. Messer & Harry M. Kaiser, *Does Production Labeling Stigmatize Conventional Milk?*, 91 AM. J. AGRIC. ECON. 1097, 1097-98 (2009) (discussing consumer trend towards hormone-free milk).

²¹ We cannot control pollination, just as we cannot control dinosaurs on the loose. See *supra* notes 5-7 and accompanying text.

²² It is worth noting, “the movement to label genetically engineered foods is not an effort to stop the advance of science and technology; rather, this movement endeavors to offer the American public full disclosure, preserving the right of free choice and transparency in the marketplace and creating a healthier, more sustainable food industry.” Kimbrell & Paulsen, *supra* note 9, at 344.

²³ See Lars Noah, *Genetic Modification & Food Irradiation: Are Those Strictly on A Need-to-Know Basis?*, 118 PENN ST. L. REV. 759, 762 (2014).

²⁴ See generally Kimbrell & Paulsen, *supra* note 9 (discussing state legislation attempts).

²⁵ GMOs play a significant role in diminishing global crop diversity and increasing production of super weeds that are resistant to herbicides. Sella-Villa, *supra* note 1, at 976; see also *infra* notes 133-140 and accompanying text (discussing concerns regarding the consequences of GMOs to consumer health and the environment).

²⁶ “The biotech industry spent over \$100 million dollars from 2012-2014 lobbying against state labeling efforts in California, Colorado and Washington. Kimbrell & Paulsen, *supra* note 9, at 346. The industry’s goal of federal preemption legislation was made public during a lawsuit alleging illegal concealment of donors for their anti-labeling campaign. *Id.*

²⁷ National Bioengineered Food Disclosure Standard, 7 U.S.C. § 1639 (2016).

with GMO labeling. Part I provides an overview of the current federal scheme regulating GMOs. Part II analyzes of the conflict surrounding GMOs and labeling. Given that analysis, Part III compares the disclosure requirement of the National Standard with the requirements of Vermont's Act 120 and concludes that Vermont's labeling law offered a better safeguard for consumer sovereignty because it included a larger range of products and required a label that immediately relayed disclosures to consumers.

II. A BRIEF HISTORY OF GMO LABELING IN THE UNITED STATES

A. *In the Beginning*

The regulatory scheme overseeing GMOs began developing thirty years ago when biotechnology ("biotech") was in its early stages.²⁸ When the technology emerged in the 1980s, the White House Office of Science and Technology Policy ("OSTP") came to a determination that goods containing GMOs were the same as foods produced through traditional crossbreeding methods and could therefore be regulated by existing statutes.²⁹ Rather than creating a new agency to oversee the developing technology, the OSTP created the Coordinated Framework for the Regulation of Biotechnology from existing agencies.³⁰

The power to make law is vested in Congress by the Constitution.³¹ Congress, however, may delegate its legislative power to the executive branch without violating the Separation of Powers doctrine³² so long as the delegation contains "intelligible standards" to confine agency discretion.³³ Many argue that agencies are better equipped to

²⁸ See Peck, *supra* note 8, at 49 (noting policies were politically motivated and favorable towards industry).

²⁹ *Id.*; see also Kimbrell & Paulsen, *supra* note 9, at 348 ("Genetic engineering is not the same as traditional plant breeding, which involves identifying genetically similar plants with useful traits and crossing these plants to produce offspring with the desired characteristics. "[G]enetic engineering," in contrast, "is a powerful technology that allows scientists, for the first time ever, to combine genetic material from widely dissimilar and unrelated organisms—for example, bacterial genes with alfalfa genes or chicken genes with maize genes." In so doing, scientists produce combinations of genetic material that do not—and cannot—occur in nature."). "Notably, the biotech industry's influence and interests weighed heavily in the formulation of the policy." Kimbrell & Paulsen, *supra* note 9, at 360-61.

³⁰ *Id.* at 360.

³¹ U.S. CONST. art. 1, §1 ("All legislative powers herein granted shall be vested in a Congress of the United States. . . .").

³² The doctrine of Separation of Powers, as implied by the three branches of government laid out in the Constitution, is based on the principle that "no branch should exceed its legal limits and accumulate a dangerous corner on governing power." Michael Stokes Paulsen, *The Most Dangerous Branch: Executive Power to Say What the Law Is*, 83 GEO. L.J. 217, 230 (1994).

³³ Gary J. Greco, *Standards or Safeguards: A Survey of the Delegation Doctrine in the States*, 8 ADMIN. L.J. AM. U. 567, 603 (1994). See Jeffrey A. Wertkin, *Reintroducing Compromise to the Nondelegation Doctrine*, 90 GEO. L.J. 1055, 1081 (2002) ("(1) Intelligible principles should be present in the language of the statute itself; (2) if possible, the Court should

implement statutes because they employ technical professionals who are familiar with the complex regulatory problems associated with policies regarding their particular area of expertise.³⁴

The three agencies charged with regulating GMOs are the United States Department of Agriculture (“USDA”), the Food and Drug Administration (“FDA”), and the Environmental Protection Agency (“EPA”).³⁵ Prior to the enactment of the National Standard, GMO labeling was primarily regulated by the FDA.³⁶ The FDA obtained the bulk of its authority to regulate GMOs from the Federal Food, Drug, and Cosmetic Act (“FDCA”).³⁷ Additionally, the FDA obtained its GMO labeling authority from the Nutritional Labeling Act of 1990 (“NLEA”).³⁸

interpret statutory language in a way that renders the statute constitutional; (3) Congress should establish a baseline to measure agency action; and (4) standards should be as reasonably precise as the subject matter requires or permits.”). The Court has not invalidated a congressional delegation of legislative authority since 1935. *Schechter Poultry Co. v. United States*, 295 U.S. 495 (1935) (holding congressional delegation was impermissible because it was unduly broad).

³⁴ LISA SCHULTZ BRESSMAN ET AL., REGULATORY STATE 473 (Vicki Bean et al. eds., 2d ed. 2013). Agency rulemaking, however, is also criticized as well. Nina A. Mendelson, *Rulemaking, Democracy, and Torrents of E-Mail*, 79 GEO. WASH. L. REV. 1343, 1357 (2011) (discussing how public participation can be skewed in favor of industry business groups and how agency science is misapplied to justify decisions that are actually based on policy). For example, during notice-and-comment procedures on a proposal restricting snowmobile access in Yellowstone, eighty percent of the 360,000 comments that the National Park System received supported the ban, however, the agency ultimately *expanded* snowmobile access. *Id.* at 1365 (emphasis added). When it came to GMOs, the FDA acknowledged that consumers expressed a desire for labeling during notice-and-comment procedures, but ultimately chose to adopt a voluntary labeling policy because agency science did not support consumers’ concerns about safety. Draft Guidance for Industry: Voluntary Labeling Indicating Whether Foods Have or Have Not Been Developed Using Bioengineering; Availability, 66 Fed. Reg. 4839, 4839-40 (FDA Jan. 18, 2001).

³⁵ Kimbrell & Paulsen, *supra* note 9, at 361 (“The FDA oversees food safety issues and genetically [modified] animals; the EPA oversees the impacts of crops engineered with pesticidal substances, as well as transgenic microbes; and the USDA regulates all other transgenic plants, overseeing their field trials and commercialization.”).

³⁶ Luis Acosta, *United States*, in THE LAW LIBRARY OF CONGRESS RESTRICTIONS ON GENETICALLY MODIFIED ORGANISMS 208, 214-15 (Mar. 2014), <http://www.loc.gov/law/help/restrictions-on-gmos/restrictions-on-gmos.pdf>. The National Standard delegates GMO labeling regulatory authority to the USDA. See *supra* note 89.

³⁷ Luis Acosta, *United States*, in THE LAW LIBRARY OF CONGRESS RESTRICTIONS ON GENETICALLY MODIFIED ORGANISMS 208, 214-15 (Mar. 2014), <http://www.loc.gov/law/help/restrictions-on-gmos/restrictions-on-gmos.pdf> (“The FDA’s primary statutory authority is the [FDCA] which authorizes the agency to regulate, among other things, “adulterated food,” defined as food that “contains any poisonous or deleterious substance that may render it deleterious to health,” and “food additives,” which include “any substance [that may] become a component or otherwise affect the characteristics of any food.” The [FDCA] prohibits the sale of adulterated or misbranded food.”)

³⁸ Kimbrell & Paulsen, *supra* note 9, at 368-69. “Congress enacted the NLEA to clarify and to strengthen the FDA’s legal authority to require nutrition labeling on foods, and to establish the circumstances under which claims may be made about nutrients in foods.” *Id.* at 369. “The

Agencies, such as the FDA, are bound by the Administrative Procedure Act (“APA”) which sets out agency procedures for making law and policy to ensure actions are fair and deliberate.³⁹ Although not a legislative body, agencies can pass rules that have a preemptive effect on State law, similar in effect to a Federal legislative law.⁴⁰ Agencies may produce these rules through formal rulemaking, similar to adjudication, which results in “a rule with future effect and general application.”⁴¹

Agencies also engage in an informal rulemaking process in which they give notice of the proposed rule in the Federal Register and provide a period for public comment.⁴² The agency then publishes a final rule subject to their discretion.⁴³ Courts require, however, that the agency publish the data relied upon to justify the proposed rule.⁴⁴ This process is commonly called “notice-and-comment” rulemaking.⁴⁵

Additionally, agencies are authorized to issue policy statements regarding their interpretation of an existing law or how the agency intends to use its discretion.⁴⁶ The agency can issue policy statements without performing public rulemaking procedures, so long as the

Act contains an express preemption provision prohibiting states from enacting laws or regulations that are ‘not identical’ to the NLEA’s nutrition labeling requirements.” *Id.* The preemption provision, however, lists specific categories to which it applies and does not include genetic engineering. *Id.*

³⁹ 5 U.S.C. § 551 (2011).

⁴⁰ *Holk v. Snapple Beverage Corp.*, 575 F.3d 329, 339 (2009).

⁴¹ *BRESSMAN ET AL.*, *supra* note 34, at 9 (discussing APA, 5 U.S.C. §§554-55). “[F]ormal rulemaking requires an actual trial complete with pre-trial proceedings, oral presentation of evidence before a hearing officer who cannot engage in ex parte communications, burdens of proof and persuasion, cross-examination, proposed findings of fact and conclusions of law, and a written decision based on the hearing.” Nielson, *supra* note 41, at 243.

⁴² Todd D. Rakoff, *The Choice Between Formal and Informal Modes of Administrative Regulation*, 52 ADMIN. L. REV. 159, 167 (2000).

⁴³ Rakoff, *supra* note 42, at 163-64. The rule published in Federal Registrar can be the original proposal or an amended version. *Id.*; see generally Randy S. Springer, *Gatekeeping and the Federal Register: An Analysis of the Publication Requirement of Section 552(a)(1)(d) of the Administrative Procedure Act*, 41 ADMIN. L. REV. 533 (1989) (“Congress established the Federal Register System in 1935 to create an organized scheme for publishing regulations issued by the federal government. Today the system is composed of three related publications, the Federal Register, the Code of Federal Regulations, and the United States Government Organization Manual. Publishing requirements are set forth in the Federal Register Act (FRA) and the Administrative Procedure Act (APA). These requirements are designed to accomplish the chief purpose of the Federal Register: providing formal notice to citizens of the existence of government regulations.”).

⁴⁴ Rakoff, *supra* note 42, at 164.

⁴⁵ *Id.*

⁴⁶ Rakoff, *supra* note 42, at 166.

agency does not treat those standards as having the force of law.⁴⁷ Policy statements are “designed to inform rather than to control”⁴⁸ and there are several benefits to issuing guidance as opposed to engaging in formal rulemaking or notice-and-comment procedures.⁴⁹ The FDA chose to issue informal policy statements regarding GMOs and labeling for the flexibility associated with this approach.⁵⁰

In a 1992 policy statement, the FDA stated that GMO plants were the same as non-GMO varieties and therefore not properly classified as “additives.”⁵¹ Instead, the FDA determined that GMOs would be presumed to be “generally recognized as safe” (“GRAS”).⁵² In 2001, the FDA issued another policy document advocating a voluntary GMO labeling system providing manufacturers with guidance, however, such disclosures were not required.⁵³ Judicial review of informal policy

⁴⁷ *Id.*

⁴⁸ Robert A. Anthony, *Interpretive Rules, Policy Statements, Guidances, Manuals, and the Like—Should Federal Agencies Use Them to Bind the Public?*, 41 DUKE L.J. 1311, 1319 (1992) (quoting *Am. Trucking Associations, Inc. v. I. C. C.*, 659 F.2d 452, 462 (5th Cir. 1981) *opinion clarified*, 666 F.2d 167 (5th Cir. 1982)).

⁴⁹ See Nina A. Mendelson, *Regulatory Beneficiaries and Informal Agency Policymaking*, 92 CORNELL L. REV. 397, 408 (2007) (discussing efficiency and flexibility in drafting guidance versus notice-and-comment rulemaking). In summary, the “agency can obtain a rule-like effect while minimizing political oversight and avoiding the procedural discipline, public participation, and judicial accountability required by the APA.” *Id.*

⁵⁰ Maryanski, *supra* note 2, at *3 (“We feel that our policy for a rapidly evolving technology, such as recombinant DNA techniques, should be one which is sufficiently flexible to permit necessary modifications as a result of technological innovations or other information that may come to our attention.”). The FDA believes a flexible policy is the most appropriate method of regulation given the rapid developing technology. *Id.* The Supreme Court upheld the FDA’s policy in *Alliance for Bio-Integrity v. Shalala*, finding that the agency’s interpretation was not arbitrary or capricious. 116 F. Supp. 2d 166 (D.D.C. 2000). The court also held that the FDA’s policy failed to trigger the Environmental Impact Statement requirement of the National Environmental Policy Act of 1969 (“NEPA”) because non-binding guidance does not constitute irreversible agency action. *Id.* at 173-74 (“NEPA requires ‘all agencies of the Federal Government ... [to] include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement . . . on the environmental impact of the proposed action.’”) Some would argue, however, that the agency’s actions in 1992 have caused irreversible effects on our environment. See *supra* note 19 and accompanying text.

⁵¹ Kimbrell & Paulsen, *supra* note 9, at 365.

⁵² *Id.* (“Absent this policy pronouncement, genetically engineered substances would have been defined and classified as food additives (i.e., substances used in food or components of food or that might affect the characteristics of food) and thus would have required premarket safety testing, approval, and labeling.”).

⁵³ *Id.* at 409. (reference nt. 145) (citing Draft Guidance for Industry: Voluntary Labeling Indicating Whether Foods Have or Have Not Been Developed Using Bioengineering, 66 Fed. Reg. 4839 (Jan. 18, 2001)).

statements, such as these, determined that they did not have the force of law and, therefore, did not preempt State legislation.⁵⁴

Although the FDA has failed to issue GMO regulations, the court has determined their informal policies are subject to judicial review.⁵⁵ The court found that the FDA's 1992 policy determination based on the presumption that GMOs are GRAS was not arbitrary or capricious.⁵⁶ Additionally, the court took notice of the agency's 2001 guidance for voluntary disclosure of GMOs based on the 1992 policy's presumptions.⁵⁷ The court found, however, that the 2001 guidance inferred that the FDA determined GMOs could be labeled "without violating federal law"⁵⁸

Biotech companies accordingly lobbied Congress to adopt and codify a ban on GMO labeling laws.⁵⁹ Consequently, this would have

⁵⁴ *Id.* at 368. The court affords Chevron deference to the agency when reviewing the constitutionality of agency action if the action has the force of law. Lisa Schultz Bressman, *How Mead Has Muddled Judicial Review of Agency Action*, 58 VAND. L. REV. 1443, 1444-45 (2005) (citing *United States v. Mead Corp.*, 533 U.S. 218, 236 (2001)). Under Chevron, if Congress is silent on a matter, the court will defer to the agency's rule so long as it is reasonable. *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 845 (1984). If the agency action does not have the force of law, the court may still be persuaded if the agency produces an interpretation that reflects a body of experience and informed judgment from which the court may rely. Bressman, *supra* at 1444-45. "The weight of such a judgment in a particular case will depend upon the thoroughness evident in its consideration, the validity of its reasoning, its consistency with earlier and later pronouncements, and all those factors which give it power to persuade, if lacking power to control." *Id.* at 1492, n.12 (quoting *Skidmore v. Swift & Co.*, 323 U.S. 134, 140 (1944)).

⁵⁵ *All. for Bio-Integrity v. Shalala*, 116 F. Supp. 2d 166, 171 (D.D.C. 2000) (illustrating how the court was able to review the FDA's informal policy statement because it was drafted utilizing notice and comment procedures). The court notes that the FDA's policy simply proposed a rebuttable presumption that GMOs are safe. *Id.* at 174.

⁵⁶ *Id.*; "The courts review the rule under a relatively relaxed test, which requires the rule to be authorized by statute and not be arbitrary or capricious." Rakoff, *supra* note 42, at 163-64. The "arbitrary and capricious" standard of review requires that the agency "examine [] relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made." *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("Normally, an agency rule would be arbitrary and capricious if 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 that it could not be ascribed to a difference in view or the product of agency expertise.").

⁵⁷ *Grocery Mfrs. Ass'n v. Sorrell*, 102 F.Supp.3d 583, 612 (D. Vt. 2015).

⁵⁸ *Id.*

⁵⁹ *See, e.g., Noah, supra* note 23, at nt. 28 (discussing failed attempts of federal labeling initiatives) (" . . . H.R. 3553, 112th Cong. (2011); H.R. 5577, 111th Cong. (2010); H.R. 6636, 110th Cong. (2008); H.R. 5269, 109th Cong. (2006); H.R. 2916, 108th Cong. (2003); H.R. 4814, 107th Cong. (2002); H.R. 3377, 106th Cong. (1999); . . . S. 2080, 106th Cong. (2000) . . . S. 809, 113th Cong. (2013); H.R. 1699, 113th Cong. (2013); . . . S. 248, 113th Cong. (2013) (proposing labeling requirement for genetically modified fish)."). Not surprisingly, biotech

potentially preempted any state labeling requirements and given the FDA's voluntary labeling policy the force of law.⁶⁰ Congress, however, was not able to pass legislation banning GMO disclosure requirements and States were, therefore, free to create mandatory labeling laws without offending the Constitution's Supremacy Clause.⁶¹

B. Recent Developments

In May 2014, Vermont enacted Act 120 requiring that food produced entirely or in part by GMOs, be labeled as such if offered for retail sale in the State.⁶² Act 120 required that manufacturers disclose whether their products were produced with genetic engineering and prohibited labeling GMO products as "natural."⁶³ The State law, however, exempted products containing meat or poultry.⁶⁴

companies spent millions of dollars lobbying for deregulation on this issue at the federal level. For example:

In 2012, GMA spent \$3 million to lobby at the federal level for the continued deregulation and use of GM products, among other things. This statistic does not include the separate payments made by the individual members of GMA such as Monsanto, whose payments to lobbyists totaled approximately \$5.97 million in 2012 alone.

Krystle B. Blanchard, *The Hazards of Gmos: Scientific Reasons Why They Should Be Regulated, Political Reasons Why They Are Not, and Legal Answers to What Should Be Done*, 27 REGENT U. L. REV. 133, 146-47 (2015). See *id.*, at Part II (discussing the inappropriate influence of industry lobbyists over government officials and the corruption of the legislative process suggesting that regulations limiting lobbyist contributions are necessary).

⁶⁰ HR 1599 would have expressly preempted states from passing labeling laws if had become law. Safe and Accurate Food Labeling Act of 2015, H.R. 1599, 114th Cong. (2015); see also *supra* text accompanying notes 23-27; cf. *Holk v. Snapple Beverage Corp.*, 575 F.3d 329 (2009) (discussing the FDA's policy regarding use of the term "natural" and specifying that only federal statutes and agency regulations with the force of law have preemptive effect on contrary State law).

⁶¹ See *Grocery Mfrs. Ass'n*, 102 F. Supp. 3d at 609.

⁶² Labeling of Food Produced with Genetic Engineering, 9 V.S.A. § 3043(a) (2016). Act 120 required that "food [intended for human consumption] offered for sale by a retailer . . . be labeled as produced entirely or in part from genetic engineering if it is a product: (1) offered for retail sale in Vermont; and (2) entirely or partially produced with genetic engineering." *Grocery Mfrs. Ass'n*, 102 F. Supp. 3d at 594 (citing 9 V.S.A. § 3043(a)).

⁶³ Labeling of Food Produced with Genetic Engineering, 9 V.S.A. § 3043(a) (2016). (referring to Act 120's disclosure requirement and "natural" restriction). Ultimately, Vermont's "natural" restriction was found to be an unconstitutional restriction on First Amendment protected speech; see also *infra Grocery Mfr. Ass'n*, 102 F. Supp. 3d at 642; see also *infra* text accompanying notes (discussing court's analysis of Act 120's "natural" restriction). This note proposes changes to Vermont's statute that would cure defects in order to survive judicial scrutiny. See *supra* APPENDIX A (reference §§ 3(5), 5).

⁶⁴ See *Grocery Mfrs. Ass'n*, 102 F. Supp. 3d at 621. State GMO labeling requirements for meat and poultry are preempted by Federal law under the FMIA and PPIA. See *Meunrit v. ConAgra Foods Inc.*, No. C 09-02220 CRB, 2010 WL 2867393, at *5 (N.D. Cal. July 20, 2010) ("Congress enacted the FMIA and the PPIA in part to prevent the interstate transfer of

Vermont's General Assembly cited several reasons for mandatory labeling.⁶⁵ The legislature noted that GMOs were increasingly present in the United States' food supply and yet the federal government required no independent testing of GMO safety.⁶⁶ Additionally, the Vermont General Assembly found that foods containing GMOs "potentially pose risks to health, safety, agriculture, and the environment."⁶⁷

Vermont's labeling law was challenged in *Grocery Manufacturer's Association v. Sorrell*.⁶⁸ On behalf of the food industry, the Grocery Manufacturer's Association ("GMA") claimed that Vermont's disclosure requirement and "natural" restriction violated the First Amendment.⁶⁹ The GMA additionally argued that the State law was preempted by various federal statutes and that Act 120 violated the Commerce Clause.⁷⁰

Disclosure requirements fall under the protection of the First Amendment and must be reasonably related to preventing consumer deception or promoting informed consumer decision-making due to a

adulterated and misbranded meat and poultry products The FMIA and the PPIA preempt state laws that satisfy two conditions: (1) the state law must impose marking, labeling, packaging or ingredient requirements; and (2) these requirements must be in addition to, or different than those required under federal law. State statutory and common law can impose requirements that satisfy the first prong. For the purposes of preemption, a requirement is a rule of law that must be obeyed, whether it arises from common law principles enforceable in damages actions or in a statute.") (internal quotation marks omitted). The USDA, unlike the FDA, requires a pre-approval process that "includes a determination of whether the labeling is false and misleading . . ." *Id.* at *7; *see also* *Krzykwa v. Campbell Soup Co.*, 946 F. Supp. 2d 1370, 1373 (S.D. Fla. 2013) (discussing the USDA regulating soups that contain meat and poultry while the FDA regulates vegetable-only soups).

⁶⁵ *See, e.g., supra* text accompanying note 71. (discussing legislature's reasons for enacting Act 120).

⁶⁶ *See* *Grocery Mfrs. Ass'n*, 102 F.Supp.3d at 597.

⁶⁷ *Id.* Based on those conclusions, the Vermont General Assembly determined that GMOs should be labeled because "[1] labeling gives consumers information they can use to make decisions about what products they would prefer to purchase, . . . [2] public opinion polls indicate labeling is relevant to consumers, and . . . [3] persons with certain religious beliefs object to producing foods using genetic engineering and object to tampering with the genetic makeup of life forms . . ." *Id.* at 597-98. The Vermont General Assembly found that "[f]or multiple health, personal, religious, and environmental reasons . . . the State should require food produced with genetic engineering to be labeled as such in order to serve the interests of the State, notwithstanding limited exceptions, to prevent inadvertent consumer deception, prevent potential risks to human health, protect religious practices, and protect the environment." *Id.* at 598.

⁶⁸ *Grocery Mfrs. Ass'n*, 102 F. Supp. 3d 583 (D. Vt. 2015), *appeal docketed*, No. 15-1504 (2d Cir. May 6, 2015).

⁶⁹ *Id.* The GMA is a trade association representing the many of the largest food and beverage companies in the United States. GROCERY MANUFACTURERS ASSOC., <http://www.gmaonline.org/about/> (last visited Jan. 16, 2017).

⁷⁰ *See* *Grocery Mfrs. Ass'n*, 102 F. Supp. 3d at 594.

potential harm.⁷¹ Speech restrictions, however, are afforded additional scrutiny and must be no more extensive than necessary to restrict false or misleading speech.⁷² Courts have recognized that restrictions on commercial speech to prevent consumer deception should be limited to those instances when actual deception is likely, or when a reasonable consumer would be deceived.”⁷³

The Vermont General Assembly found natural labels to be misleading to consumers because genetic engineering involves processes that do not occur in nature.⁷⁴ The court examined available social science evidence to determine if advertising products that contain GMOs as “natural” was misleading to consumers and determined that Vermont, at most, had presented “some evidence that some consumers may find the use of “natural” terminology in conjunction with [GMOs]

⁷¹ *Id.* at 626. *Zauderer’s* reasonable relationship test states that “disclosure requirements must be reasonably related to the State’s interest in preventing deception of consumers, or promote informed consumer decision-making in order to address a potential cause of harm.” *Id.* (internal quotations omitted). When determining whether *Central Hudson’s* intermediate scrutiny or *Zauderer’s* reasonable relationship test should apply, the court considers three factors: “[1] whether the compelled speech is “commercial” in nature, [2] whether it is purely factual and not “controversial,” and [3] whether Act 120’s GE disclosure requirement is supported by a State interest beyond merely satisfying consumer curiosity. The court answers each of these questions in the affirmative.” “Under *Zauderer*, there is . . . no requirement that a disclosure law get at all facets of the problem it is designed to ameliorate.” *Id.* (quoting 471 U.S. at 651 n. 14, 105 S.Ct. 2265) (internal quotation marks omitted). “[A] statute is not invalid under the Constitution [when] it might have gone farther than it did [and] the Vermont General Assembly was therefore entitled to take one step at a time.” *Id.*

⁷² *Id.* at 639. Potentially misleading speech is protected under the First Amendment and any restrictions to this speech must survive *Central Hudson’s* intermediate scrutiny. Under the *Central Hudson* test, the court “must examine whether: [1] the regulated expression is false or misleading; [2] the government interest is substantial; [3] [Act 120’s “natural” restriction] directly and materially advances the governmental interest asserted; and [4] [Act 120’s “natural” restriction] is no more extensive than necessary to serve that interest.” *Id.*

⁷³ *Id.* at 641; *Id.* at 636. Commercial speech can be actually, inherently, or potentially misleading. *Piazza’s Seafood World, LLC v. Odom*, No. CIV.A. 04-690, 2004 WL 2998575, at *4 (E.D. La. Dec. 23, 2004), *aff’d*, 448 F.3d 744 (5th Cir. 2006). (The highest level on the hierarchy is “actually misleading” commercial speech. Commercial speech is “actually misleading” only where the record contains actual evidence of deception. Commercial speech is “inherently misleading” when “the particular method by which the information is imparted to consumers is inherently conducive to deception and coercion.” Inherently misleading commercial speech is that which is “inherently likely to deceive the public.” Commercial speech can be “inherently misleading” notwithstanding a lack of actual evidence of deception in the record. Finally, the Supreme Court has recognized a third category of commercial speech as that which can be “potentially misleading.” States cannot place an absolute ban on potentially misleading commercial speech if the information can also be presented in a way that is not deceptive. Restrictions on potentially misleading commercial speech may be no broader than reasonably necessary to prevent the deception.”) (internal citations omitted).

⁷⁴ *Grocer Mfrs. Ass’n*, 102F.Supp.3d at 598. They concluded that natural labels were “[1] inherently misleading, [2] pose[d] a risk of confusing or deceiving consumers, and [3] conflict[ed] with the general perception that “natural” foods are not genetically engineered.” *Id.*

misleading depending on how “natural” is defined.⁷⁵ The data did not meet the level of “evidence of deception” that is required to support an outright ban on commercial speech.”⁷⁶

The GMA succeeded in overturning Act 120’s “natural” restriction.⁷⁷ The court held that Vermont failed to show that consumers were misled by advertising GMOs as natural.⁷⁸ Further, the court found that Act 120’s “natural” restriction was more extensive than necessary to advance the State’s interests.⁷⁹ Additionally, the court determined that

⁷⁵ *Id.* at 638.

⁷⁶ *Id.* at 636; see also RODNEY A. SMOLLA, RIGHTS AND LIABILITIES IN MEDIA CONTENT: INTERNET, BROADCAST, AND PRINT § 11:17 (2d ed.) (“When the government bases a restriction on commercial speech on the ground that the speech is ‘actually misleading,’ . . . the lack of empirical evidence supporting the claims will often be deemed a fatal flaw”).

⁷⁷ See *infra* note 81 and accompanying text (discussing results of GMA’s challenge to Vermont’s “natural” restriction).

⁷⁸ See *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 638. The court examined available social science evidence to determine if advertising products that contain GMOs as “natural” was misleading to consumers. *Krzykwa*, 946 F.Supp.2d at 1374 (S.D. FLA. 2013). The 2010 Hartman Report was a survey “that purportedly shows that 61% of consumers believed that “natural” suggests or implies “the absence of genetically engineered food.” *Id.* The Report concluded that “the word ‘natural’ on food products has become increasingly ‘meaningful’ to consumers because they desire ‘fresh, real foods’ that are ‘less processed’ with ‘clean ingredient lists,’ and that ‘natural’ means ‘simple, real foods.’” *Id.* Additionally, the 2013 Vermonter Poll “confirmed that ‘natural’ labels on genetically engineered foods would be misleading to Vermont citizens in particular.” *Id.* The court, however, found this conclusion contradictory with the report’s additional finding that “natural as a marketing term remains vague and unappealing to consumers.” *Id.* The court was not persuaded by the empirical evidence that Vermont provided and found that “[a] survey asking whether certain consumers think GE is a ‘fundamentally unnatural’ process, is not the equivalent of actual and unsolicited citizen problems or complaints regarding [GMO] manufacturers’ use of ‘natural’ terminology” and that the evidence fell short of the level of deception needed to support a ban on commercial speech. *Id.* While the Second District did not find the results of the 2010 Hartman Report and 2013 Vermonter Poll persuasive, Ohio has the benefit of hindsight and can consider any inadequacies when designing and implementing a new survey regarding the likelihood of the “natural” labeling misleading consumers. The way the FDA defines “natural” is not as important as the way consumers perceive the term as it relates to consumer confusion. See, e.g. *Krzykwa*, 946 F.Supp.2d at 1374 (confirming the FDA’s failure to require GMO labeling did not preempt consumer confusion claims relating to the use of the term “natural” to advertise soups made with GM corn). Therefore, empirical evidence of actual confusion would outweigh the FDA’s current informal definition when determining whether a State’s restriction on term “natural” would survive Central Hudson scrutiny.

⁷⁹ *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 641. Given “the potential benefits of prohibiting the use of undefined terms by only some food manufacturers and the likelihood those benefits will be achieved remains remote, contingent, and speculative, turning almost entirely on how “natural” terminology is defined and which commercial speakers are banned from using it.” *Id.*

the language of the statute was impermissibly vague⁸⁰ and drafted in a way that may have violated the Commerce Clause.⁸¹

Act 120's disclosure requirement, however, withstood First Amendment challenges.⁸² The court afforded deference to Vermont's legislature and found that the disclosure of non-controversial, commercial speech furthered legitimate and substantial governmental interests such as, consumer health, environmental safety, and informed consumer decision making.⁸³ The GMA filed a timely appeal challenging the court's decision.⁸⁴

Despite the GMA's best efforts to block the law, Act 120 became effective July 1, 2016.⁸⁵ Two weeks later, however, Congress passed federal preemption legislation prohibiting States from passing GMO labeling laws.⁸⁶ On July 29, 2016, President Obama signed the National Bioengineering Food Disclosure Standard ("the National Standard") and thereby nullified Vermont's law.⁸⁷

⁸⁰ *Id.* at 644. The Supreme Court has found a statute can be impermissibly vague for two reasons: [1] "it fails to provide people of ordinary intelligence a reasonable opportunity to understand what conduct it prohibits" and [2] "it authorizes or even encourages arbitrary and discriminatory enforcement." *Hill v. Colorado*, 530 U.S. 703, 732, (2000); *see also* *F.C.C. v. Fox Television Stations, Inc.*, 132 S. Ct. 2307, 2317 (2012) ("A fundamental principle in our legal system is that laws which regulate persons or entities must give fair notice of conduct that is forbidden or required.").

⁸¹ *See Grocery Mfrs. Ass'n*, 102 F.Supp.3d at 605. The court concluded that GMA raised a sufficient per se challenge because "Act 120's 'natural' restriction reaches national and Internet communications that cannot lawfully be regulated by a single state" because the Act fails to define "signage" or "advertising" or a requirement that the signage or advertising occur in Vermont. *Id.* Therefore, "Act 120 purports to restrict a GE manufacturer's use of 'natural' terminology in signage and advertising nationwide and on the Internet." *Id.*

⁸² *See infra* note 103 and accompanying text (discussing results of GMA's challenge to Vermont's GMO disclosure requirement).

⁸³ *See Grocery Mfrs. Ass'n*, 102 F.Supp.3d at 621. The court found that Vermont's disclosure requirement "compel[led] disclosure of purely factual, non-controversial, commercial information that furthers . . . legitimate and substantial governmental interests . . ." *Id.*

⁸⁴ *Grocery Mfrs. Ass'n*, 102 F.Supp.3d at 583. Appeals were dismissed after the enactment of the National Standard. *Id.*

⁸⁵ *Id.* at 594.

⁸⁶ Dan Charles, *Congress Just Passed A GMO Labeling Bill. Nobody's Super Happy About It*, THE SALT: NPR (July 14, 2016, 5:34 PM), <http://www.npr.org/sections/thesalt/2016/07/14/486060866/congress-just-passed-a-gmo-labeling-bill-nobodys-super-happy-about-it>.

⁸⁷ 7 U.S.C.A. § 1639 (West); *see also* Mary Clare Jalonick, *Obama Signs Bill Requiring Labeling of GMO Foods*, WASH. POST (July 29, 2016), <http://bigstory.ap.org/article/65c61c63e3df4b74bb90a2187122d744/obama-signs-bill-requiring-labeling-gmo-foods>. Federal legislators and food manufacturers favored the uniformity of a federal label arguing that State laws would create a patchwork system of conflicting labeling requirements that would burden interstate commerce. Peggy Lowe, *Senators Reach Deal On National GMO Labeling Bill*, THE SALT: NPR (June 23, 2016, 6:39

In addition to preempting State legislation,⁸⁸ the National Standard delegates GMO labeling regulatory authority to the USDA and delays disclosure for two years to develop the final details of the national labeling requirements.⁸⁹ The law requires labeling for products containing GMOs and affords discretion to the agency to determine the minimum percentage of GMO presence required to trigger application under the law.⁹⁰ Most significantly, in lieu of a label like Vermont's, the statute allows manufacturers to use a Quick Response ("QR") code which, on its face, does not disclose to a consumer whether a product contains GMOs.⁹¹

Prior to the National Standard, the food industry primarily supported legislation that banned GMO labeling requirements nation-wide.⁹² Despite requiring GMO disclosure, the National Standard was largely supported by members of the food industry who favored a national label in lieu of a State regime.⁹³ The federal law purports to require mandatory disclosure nation-wide, however, fundamentally, it is a ban

PM), <http://www.npr.org/sections/thesalt/2016/06/23/483290269/senate-unveils-a-national-gmo-labeling-bill>.

⁸⁸ 7 U.S.C.A. § 1639b (c) (West) ("Notwithstanding section 1639i of this title, no State or political subdivision of a State may directly or indirectly establish under any authority or continue in effect as to any food in interstate commerce any requirement relating to the labeling or disclosure of whether a food is bioengineered or was developed or produced using bioengineering for a food that is the subject of the national bioengineered food disclosure standard under this section that is not identical to the mandatory disclosure requirement under that standard.").

⁸⁹ 7 U.S.C.A. § 1639b (a) (West) ("Not later than 2 years after the date of enactment of this subtitle, the Secretary shall (1) establish a national mandatory bioengineered food disclosure standard with respect to any bioengineered food and any food that may be bioengineered; and (2) establish such requirements and procedures as the Secretary determines necessary to carry out the standard.").

⁹⁰ 7 U.S.C.A. § 1639b (b)(2) (West). Additionally, the National Standard prohibits requiring animals fed with GMOs to be labeled. 7 U.S.C.A. § 1639b (b)(2)(A) (West). The law gives small manufacturers an additional year to comply with new requirements and exempts very small manufacturers entirely. 7 U.S.C.A. § 1639b (b)(2)(F) (West); 7 U.S.C.A. § 1639b (b)(2)(G) (West). The National Standard also prohibits non-organic food manufacturers from advertising that their products are "Non-GMO" simply because the crops were not produced with GM plants. 7 U.S.C.A. § 1639c (c) (West) ("A food may not be considered to be "not bioengineered", "non-GMO", or any other similar claim describing the absence of bioengineering in the food solely because the food is not required to bear a disclosure that the food is bioengineered under this subchapter.").

⁹¹ Mary Clare Jalonick, *Obama Signs Bill Requiring Labeling of GMO Foods*, WASH. POST (July 29, 2016), <http://bigstory.ap.org/article/65c61c63e3df4b74bb90a2187122d744/obama-signs-bill-requiring-labeling-gmo-foods>; see, e.g., *infra* Appendix B, Figure 2.

⁹² See *supra* note 59 and accompanying text (discussing the industry's lobbying efforts to ban State labeling requirements).

⁹³ Jalonick, *supra* note 91.

on State labeling laws.⁹⁴ Critics argue that the National Standard's requirements are favorable towards industry and that the law affords little protection to consumers who overwhelmingly desire GMO disclosure.⁹⁵

III. TO LABEL OR NOT TO LABEL?

A. *Making Sense of the GMO Conflict*

Preemption supporters believe that the Federal government should be exclusively responsible for regulating, or deregulating, GMOs and their labeling.⁹⁶ Justice Brandeis, however, dissenting in *New State Ice Co. v. Liebmann*, argued that States should be allowed to experiment in areas of social and economic sciences, and that courts should practice judicial restraint affording significant deference to state legislatures.⁹⁷ According to Justice Brandeis, "[i]t 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."⁹⁸

In the past, the Court has deferred to the State legislature and found that they should not "sit idly by and wait until potentially irreversible environmental damage has occurred or until the scientific community agrees on what . . . organisms are or are not dangerous before it acts to avoid such consequences."⁹⁹ Despite applying strict scrutiny to the dormant commerce clause challenge, the Court upheld the State law.¹⁰⁰ The Court specified that, due to the "substantial uncertainties" surrounding the effects to the environment and the lack of less discriminatory means available to protect against those threats, the law was constitutional in spite of its burden on interstate commerce.¹⁰¹

Proponents of GMOs are adamant that modified foods are safe and cite numerous studies in support of this claim.¹⁰² The companies that

⁹⁴ Jalonick, *supra* note 91.

⁹⁵ Jalonick, *supra* note 91; *see, e.g., infra* § III (analyzing the National Standard).

⁹⁶ *See supra* note 87 and accompanying text. (discussing the uniformity in federal labeling).

⁹⁷ *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

⁹⁸ *Id.*

⁹⁹ *Maine v. Taylor*, 477 U.S. 131, 148, 106 S. Ct. 2440, 2452 (1986).

¹⁰⁰ The Court upheld a Maine statute that prohibited importing baitfish from out of state. *Id.* The Court has found that when a State law discriminates against interstate commerce, "the statute must serve a legitimate local purpose . . . that cannot be served as well by available nondiscriminatory means." *Id.* at 140.

¹⁰¹ *Id.* at 131.

¹⁰² According to Monsanto's website:

[g]overnmental regulatory agencies, scientific organizations and leading health associations worldwide agree that food grown from GM crops is safe to eat. The World Health Organization, the American Medical Association, the U.S. National Academy of Sciences, the British Royal Society, among others that have examined the evidence,

perform these tests and report GMO safety data to the government, however, are the same biotech companies that stand to gain the most from a federal preemption provision.¹⁰³ Those in favor of GMO disclosure point to these flaws, as well as other gaps identified in the available science, and argue that the federal government should not decide these issues on the basis of the financial self-interest of certain parties involved.¹⁰⁴

all come to the same conclusion: consuming foods containing ingredients derived from GM crops is safe to eat . . .

Available at <http://www.monsanto.com/newsviews/pages/food-safety.aspx#q3>. The FDA places the obligation on producers of new foods to ensure that the foods they create are safe for human consumption. FOOD AND DRUG ADMINISTRATION, STATEMENT OF POLICY: FOODS DERIVED FROM NEW PLANT VARIETIES, 57 FR 22984-01 (1992). The truly frightening thing about this is that Monsanto has made it clear that they are not responsible for safety, stating, "Monsanto should not have to vouchsafe the safety of biotech food . . . Our interest is in selling as much of it as possible. Assuring its safety is the F.D.A.'s job." Gary Gregory, *What's Immoral About Monsanto?: Strengthening the Roots of the Moral Utility Requirement by Amending the U.S. Patent Act*, 21 CARDOZO J. INT'L & COMP. L. 759, 783 (2013). This begs the question, if the FDA says it is the manufacturers' responsibility and the manufacturers say it is the FDA's responsibility, who is actually making sure that the foods American's consume are safe?

¹⁰³ See Muller, *supra* note 10, at 520 (commenting on FDA's lack of safety assessment and describing voluntary consultation process). The FDA will view scientific results submitted by manufacturers and typically follow up with a letter explaining that the FDA had no further questions. *Id.* While certainly not unusual in the politics of legislation, the influence and financial incentives of interested parties warrant public scrutiny. The primary sponsor of HR 1599 is U.S. Representative Mike Pompeo from Kansas. Safe and Accurate Food Labeling Act of 2015, H.R. 1599, 114th Cong. (2015). According to the Washington Post, Pompeo received \$80,000 from Koch Industries for his 2010 US House of Representatives campaign and immediately began proposing Koch friendly legislation his first few weeks in office. Dan Eggen, *Pompeo Draws Liberal Groups' Ire*, WASH. POST (Mar. 20, 2011), https://www.washingtonpost.com/politics/pompeo_draws_liberal_groups_ire/2011/03/10/ABogK33_story.html. According to the Center for Food Safety, Georgia-Pacific, a subsidiary of Koch Industries, also a member of the GMA, spent \$7 million alone lobbying against Washington State's mandatory labeling effort. Press Release, Center for Food Safety, Koch Industries and Monsanto Team up to End Your Right to Know (Apr. 3, 2014) (available at <http://www.centerforfoodsafety.org/press-releases/3042/koch-industries-and-monsanto-team-up-to-end-your-right-to-know#>).

¹⁰⁴ For example, the Vermont General Assembly has determined that FDA does not require independent testing of genetically modified foods; current studies accepted by FDA are biased due to financial conflicts of interest; long term or epidemiologic studies are lacking; and conflicting scientific literature show that GMOs "potentially pose risks to the health, safety, and agriculture, and environment. . . ." *Grocery Mfrs. Ass'n*, 102 F.Supp.3d at 597. ("Under its regulatory framework, the FDA does not independently test the safety of genetically engineered foods. Instead, manufacturers submit safety research and studies, the majority of which the manufacturers finance or conduct. The FDA reviews the manufacturers' research and reports through a voluntary safety consultation, and issues a letter to the manufacturer acknowledging the manufacturer's conclusion regarding the safety of the genetically engineered food product being tested. The FDA does not use meta-studies or other forms of statistical analysis to verify that the studies it reviews are not biased by financial or professional conflicts of interest. There is a lack of consensus regarding the validity of the research and science surrounding the safety of genetically engineered foods, as indicated by the fact that there are peer-reviewed studies

The biotech industry has thrived in the United States, in large part, because of relaxed regulations governing the technology.¹⁰⁵ The United States is the lead producer of GMOs, sharing forty percent of the world market, however, notably, other countries are also concerned with the reliability of available science.¹⁰⁶ In lieu of data providing conclusive evidence of the technology's safety, those nations take a precautionary approach towards GMOs.¹⁰⁷

Many European nations have laws that require labeling or have banned GMOs all together.¹⁰⁸ These restrictions reflect a global distrust of the biotech industry as a whole.¹⁰⁹ Supporters of GMOs, however, cite three major benefits: (1) increased agricultural yields and quality; (2) improved environment; and (3) more food available for consumption.¹¹⁰ Biotech companies argue that GMOs are the cure to food shortages and world hunger, however, others believe these statements conflict with industry policies such as seed patenting and replant prohibitions.¹¹¹

published in international scientific literature showing negative, neutral, and positive health results. There have been no long-term or epidemiologic studies in the United States that examine the safety of human consumption of genetically engineered foods.”).

¹⁰⁵ See *supra* note 10, and accompanying text (discussing government's proactionary approach towards GMOs).

¹⁰⁶ Luis Acosta, *United States, in THE LAW LIBRARY OF CONGRESS RESTRICTIONS ON GENETICALLY MODIFIED ORGANISMS* 208, 208 (Mar. 2014), <http://www.loc.gov/law/help/restrictions-on-gmos/restrictions-on-gmos.pdf>.

¹⁰⁷ John Stephen Fredland, *Unlabel Their Frankenstein Foods!: Evaluating a U.S. Challenge to the European Commission's Labeling Requirements for Food Products Containing Genetically-Modified Organisms*, 33 VAND. J. TRANSNAT'L L. 183 (2000). While the United States has accepted the use of genetically modified foods with little resistance, Europeans have generally expressed fear in these so called “Frankenstein foods” and the effects they have on our health and environment. *Id.*

¹⁰⁸ *Non-GMO Project FAQ TriFold – US – July 2013*, NON-GMO PROJECT, http://www.nongmoproject.org/wp-content/uploads/2013/08/NonGMO_Pocket_TriFold_US.pdf.

¹⁰⁹ See generally Fredland, *supra* note 7, at Part II (discussing the development of genetically modified foods and the backlash from Europeans); see also *GMO OMG* (A Film by Jeremy Seifert 2013) (discussing Haitians burning donated seeds claiming Monsanto doesn't care about their health or the quality of their food, only money).

¹¹⁰ Muller, *supra* note 10, at 515. Despite these claims, “many anti-GMO groups believe hunger stems from poverty, rather than food scarcity.” Huan Lou, *The Golden Rice War in the Philippines: A Ban on Golden Rice Research Is Not A Wise Move Following the Judicial Ban on Bt Eggplant Field-Testing*, 24 MINN. J. INT'L L. 101, 122 (2015). Further, some argue that the biotech industry creates a food monopoly by placing control of the world's food supply in the hands of only a few companies, putting the entire human race at risk. Gregory, *supra* note 102, at 793.

¹¹¹ Due to patent laws, companies can, and do, require farmers who purchase their seed to sign agreements that prohibit collecting and replanting. Kimbrell & Paulsen, *supra* note 9, at 351. While this may be legal, many believe it is immoral. *GMO OMG* (A Film by Jeremy Seifert 2013) (Haitians believe that “[t]he seeds of life are the common inheritance of all

The scientific studies that the government relies on when arriving at its policy determinations are riddled with conflict and based upon biased industry processes.¹¹² In this regard, the government defers to research provided by biotech companies, like Monsanto,¹¹³ because it believes legislators should rely on experts in the industry.¹¹⁴ Indeed, absent economic biases, it is likely the government would be correct. As the manufacturer, the scientists at Monsanto should know more about the

humanity, as numerous and diverse as the stars above, owned by none and shared by all."); see also Valery Federici, *Genetically Modified Food and Informed Consumer Choice: Comparing U.S. and E.U. Labeling Laws*, 35 BROOK. J. INT'L L. 515, 527 (2010) (criticizing intellectual property rights that prevent traditional seed-saving practices). Additionally, despite decades of producing GMO crops, the biotech industry has failed to reduce world hunger. Kimbrell & Paulsen, *supra* note 9, at 352-53 ("... the only independent study of [GMO crop yield] results (by the Union of Concerned Scientists) concluded that [GMOs] do not [increase yields], but noted that traditional breeding successes do. . ."). Rather than introducing GMOs designed to produce greater yields, biotech companies have primarily introduced plant varieties that are resistant to the chemicals they sell. *Id.* at 344.

¹¹² See *Grocery Mfrs. Ass'n*, 102 F.Supp.3d at 597 ("Under its regulatory framework, the FDA does not independently test the safety of genetically engineered foods. Instead, manufacturers submit safety research and studies, the majority of which the manufacturers finance or conduct. The FDA reviews the manufacturers' research and reports through a voluntary safety consultation, and issues a letter to the manufacturer acknowledging the manufacturer's conclusion regarding the safety of the genetically engineered food product being tested. The FDA does not use meta-studies or other forms of statistical analysis to verify that the studies it reviews are not biased by financial or professional conflicts of interest. There is a lack of consensus regarding the validity of the research and science surrounding the safety of genetically engineered foods, as indicated by the fact that there are peer-reviewed studies published in international scientific literature showing negative, neutral, and positive health results. There have been no long-term or epidemiologic studies in the United States that examine the safety of human consumption of genetically engineered foods.")

¹¹³ Monsanto is the world's largest producer of GMO seeds. Kimbrell & Paulsen, *supra* note 9, at 353. Founded in 1901, Monsanto was one of a handful of companies that produced Agent Orange, and its main poison, Dioxin. See Kelly E. Calder, *Harvesting A Lawsuit: Challenging the Enforcement and Validity of Monsanto's Transgenic Seed Patents*, 5 KY. J. EQUINE, AGRIC. & NAT. RESOURCES L. 97, 99 (2013). It sold DDT, PCBs, the controversial dairy cow hormone, and cancer-linked Aspartame sweetener. *Id.*

¹¹⁴ See *supra* note 112. (discussing how the FDA relies on scientific evidence provided by manufacturers). Unfortunately, Monsanto has a history of withholding information about the harmful consequences of the products they produce. Donald L. Barlett & James B. Steele, *Monsanto's Harvest of Fear*, VANITY FAIR, May 2008, <http://www.vanityfair.com/news/2008/05/monsanto200805>. In 1956, the Navy conducted independent research on one of the company's products containing PCBs and made Monsanto aware of the fact that it caused death in all of the test subjects. *Id.* In 1966, when conducting its own study, Monsanto discovered that PCBs caused death to all of its test subjects in only a matter of minutes. *Id.* The company persisted to downplay the results and concealed the harmful effects of their products. *Id.* Today, Monsanto's chemical plants are some of the most polluted areas in our country. *Id.* See also *Monsanto's Disgrace: Putting Money Before Human Safety*, REC. N. N.J. L12, Jan. 8, 2002, available at 2002 WLNR 14855564 (discussing Monsanto's PCB pollution in Anniston, Alabama and General Electric's PCB pollution of the Hudson River). In its defense, Monsanto argues that they shouldn't be held responsible for unethical company practices of the past. Barlett & Steele, *supra*.

effects of GMOs. The government, however, must take additional precautions to ensure that GMOs are safe in light of the large financial interest the biotech industry has in the policies that influence GMO regulations.¹¹⁵

Instead, in lieu of formal rulings that require stricter procedures for approval, the FDA drafted policy statements declaring GMOs safe for human consumption.¹¹⁶ The evidence that the FDA considered when making these policies was not subjected to any accepted scientific methodology or peer review.¹¹⁷ Despite this fact, supporters of federal

¹¹⁵ Consider these numbers:

In 2014, the global market value of biotech crops was US\$15.7 billion representing 22% of the US\$72.3 billion global crop protection market in 2013, and 35% of the ~US\$45 billion global commercial seed market. Of the US\$15.7 billion biotech crop market, US\$11.3 billion (72%) was in the industrial countries and US\$4.4 billion (28%) was in the developing countries. The market value of the global biotech crop market is based on the sale price of biotech seeds plus any technology fees that apply. *The accumulated global value of biotech crops since 1996 is estimated at US\$133,541 billion.*

Pocket K No. 16: Global Status of Commercialized Biotech/GM Crops in 2014, INTERNATIONAL SERVICE FOR THE ACQUISITION OF AGRI-BIOTECH APPLICATIONS, (Jan. 2015), <http://www.isaaa.org/resources/publications/pocketk/16/> (see *The Global Value of Biotech Crops*) (emphasis added); see also *supra* note 109.(discussing how the industry is more concerned with making money they consumer safety). The FDA has left the fox guarding the proverbial henhouse. Michael Taylor, the current deputy commissioner for foods, is a former Monsanto employee. Blanchard, *supra* note 59, at 147. Mr. Taylor started as legal counsel for the FDA in 1976. Cusimano, *supra* note 14, at 1106. He left that position to become chief counsel for Monsanto in 1981. *Id.* Ten years later, he returned to the FDA. *Id.* Today, the job duties of a former Monsanto employee include planning new food safety legislation and ensuring accurate food labels. *Meet Michael R. Taylor, J.D., Deputy Commissioner for Foods and Veterinary Medicine*, U.S. FOOD AND DRUG ADMINISTRATION, (July 7, 2014), <http://www.fda.gov/AboutFDA/CentersOffices/OfficeofFoods/ucm196721.htm>. In addition to Michael Taylor and the many scientists employed by the FDA, Monsanto has infiltrated other areas of the federal government as well. Cusimano, *supra* note 14, at 1107. For example, former Secretary of Defense Donald Rumsfeld, former Secretary of Agriculture Anne Veneman, and former Health and Human Services Secretary Tommy Thompson, Attorney General John Ashcroft all have ties to Monsanto. *Id.* Controversially, United States Supreme Court Justice Clarence Thomas, a former lawyer for Monsanto, has refused to recuse himself from decisions that involve the company. Brianna M. Schonenberg, *Twenty Years in the Making: Transitioning Patented Seed Traits into the Generic Market*, 97 MARQ. L. REV. 1039, 1083 (2014) (see nt. 266). For example, Justice Thomas, writing the majority opinion in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 126, 145 (2001) held that newly developed plant breeds can be patented. *Id.*

¹¹⁶ See *supra* note 56 and accompanying text. The FDA determined these policies relying on political presumptions rather than scientific evidence.

¹¹⁷ While the FDA believes it is in the best interests of the biotech industry for manufacturers to consult the agency prior to introducing a new GMO into the market, it is not required under the FDA's current policies. Agency Information Collection Activities; Proposed Collection; Comment Request; Guidance on Consultation Procedures: Foods Derived From New Plant Varieties, 75 Fed. Reg. 7274, 7275 (Feb. 18, 2010). If a manufacturer chooses to consult the agency prior to releasing the GMO into the market, they submit a selection of data they have compiled to the agency that they believe proves the GMO is safe for human consumption. *Id.* Rather than conduct a comprehensive scientific review of that data, agency scientists determine

preemption cited the FDA's policies regarding the safety of GMOs as further evidence to support passing a preemption bill.¹¹⁸

Further adding to the conflict is the fact that truly independent research on GMOs is hard to come by.¹¹⁹ Traditionally, science is considered reliable because the public presumes research has been conducted responsibly.¹²⁰ Responsible research methods dictate that scientists share resources and openly communicate with other researchers about their findings.¹²¹ Sharing of information in the academic community enables other researchers to replicate and validate the initial researcher's results.¹²² Seed patents and privately funded research facilities, however, have made it nearly impossible for other researchers to independently validate biotech industry data.¹²³

In 2015, the National Academies of Sciences, Engineering, and Medicine ("NAS") conducted a study to examine the conflicting theories and science that existed regarding GMOs.¹²⁴ The NAS is a private, non-profit organization of distinguished scientists, responsible for "providing independent, objective advice to the nation on matters

only whether there are any unresolved issues that exist regarding the GMO that would require the FDA to take action. *Id.* The FDA argues this approach is appropriate because all foods are inherently dangerous and the industry has a long-standing tradition of ensuring that the foods brought to market are safe for consumption. Maryanski, *supra* note 2, at 5.

¹¹⁸ See, e.g., *Grocery Mfrs. Ass'n*, 102 F.Supp.3d at 583 (analyzing plaintiff's argument that Vermont's labeling law conflicts with federal policies regarding GMOs created by the FDA). See also Fredland, *supra* note 107, at 188 ("The fact that [GMOs] have passed the demanding tests of the U.S. FDA bolsters claims that products are safe."). *Double check to make sure this is still accurate if not reword to refer to previous attempts to codify the policy*

¹¹⁹ For example:

A researcher who wants to study any potential adverse effect that a transgenic crop may have on either the health of its end consumers or the environment in which it grows must first purchase the seeds from the corporation that holds the patent. Anyone who purchases these seeds also must sign a licensing agreement, which is often included in any commercial product that contains intellectual property. However, instead of simply preventing a researcher from replicating their intellectual property in violation of their patents, Monsanto and other corporations have also explicitly forbidden the use of the seeds for any independent research.

Gregory, *supra* note 102, at 766.

¹²⁰ COMMITTEE ON ASSESSING INTEGRITY IN RESEARCH ENVIRONMENTS (U.S.), *INTEGRITY IN SCIENTIFIC RESEARCH: CREATING AN ENVIRONMENT THAT PROMOTES RESPONSIBLE CONDUCT* 33 (2002).

¹²¹ *Id.* at 37-38.

¹²² *Id.*

¹²³ *Id.*; see, e.g., *supra* note 119.

¹²⁴ The National Academies of Sciences, Engineering, and Medicine, *A Science-Based Look at Genetically Engineered Crops*, <http://nas-sites.org/ge-crops/category/about-the-study> (last visited Apr. 9, 2016) (reference "About the Study") (discussing a study attempting to examine all viewpoints on GMOs).

related to science and technology.”¹²⁵ The NAS proposed resolving the GMO controversy by conducting “[a]n independent, objective study that [1] examines what has been learned about [genetically engineered] crops, [2] assesses whether initial concerns and promises were realized since their introduction, and [3] investigates new concerns and recent claims.”¹²⁶ Results of the study were presumed to be subjected to rigorous methodical review and made available to the public in May 2016.¹²⁷

The results backed industry claims and the NAS study concluded that GMOs are safe for consumers and the environment.¹²⁸ Later, however, reports surfaced implicating conflicts within the NAS that tainted the results of the so-called independent study.¹²⁹ Scientific methodology requires that scientists disclose any potential conflicts to provide transparency and ensure integrity in the results of their research.¹³⁰ Often these conflicts center around financial interests in the outcome of the research being conducted.¹³¹ Here, the conflict at the NAS centered around the financial interests of both the director of the study, as well as, the individual scientists involved with the project.¹³²

Concerns about GMOs primarily center around two issues: (1) their effect on the environment and (2) their effect on those who consume them.¹³³ Despite industry claims, evidence suggests that GMOs have caused several unforeseen consequences to the environment.¹³⁴ So-called “gene drift” causes cross contamination to neighboring non-GMO crops.¹³⁵ Pesticide drift damages non-GMO plant varieties in the area.¹³⁶ The increased use of chemicals in farming

¹²⁵ *Mission*, NATIONAL ACADEMY OF SCIENCES, <http://www.nasonline.org/about-nas/mission> (last visited Jan. 17, 2017).

¹²⁶ *Id.* (reference Frequently Asked Questions).

¹²⁷ *Id.* (discussing methods used to ensure research is complete and independent).

¹²⁸ Andrew Pollack, *Genetically Engineered Crops Are Safe, Analysis Finds*, N.Y. TIMES (May 17, 2016), <http://nyti.ms/24Xdtr>.

¹²⁹ Stephanie Strom, *National Biotechnology Panel Faces New Conflict of Interest Questions*, N.Y. TIMES (Dec. 27, 2016), <http://nyti.ms/2hqZc7t>.

¹³⁰ COMMITTEE ON ASSESSING INTEGRITY IN RESEARCH ENVIRONMENTS (U.S.), *supra* note 120, at 38

¹³¹ *Id.*

¹³² *See* Stephanie Strom, *National Biotechnology Panel Faces New Conflict of Interest Questions*, N.Y. TIMES (Dec. 27, 2016), <http://nyti.ms/2hqZc7t>.

¹³³ Gregory N. Mandel, *Gaps, Inexperience, Inconsistencies, and Overlaps: Crisis in the Regulation of Genetically Modified Plants and Animals*, 45 WM. & MARY L. REV. 2167, 2171 (2004).

¹³⁴ *See, e.g., infra* text accompanying notes 135-37.

¹³⁵ *See, e.g.* Lundquist, *supra* note 19 and accompanying text.

¹³⁶ Rebecca K. Stewart, *Weeds, Seeds & Deeds Redux: Natural and Legal Evolution in the U.S. Seed Wars*, 18 STAN. TECH. L. REV. 79, 101 (2014) (“Even farmers who don’t rely on

has decreased vulnerable pollinator populations and created “super weeds” that are resistant to herbicides.¹³⁷

Those concerned with the effects of consuming GMOs believe it premature to state that modified foods are safe for consumers.¹³⁸ They point to independent research that suggests a correlation between GMOs and cancer, despite accepted industry data that overwhelmingly says otherwise.¹³⁹ Irrational or not, due to concerns regarding the effects of GMOs on consumer health and the environment, many Americans desire GMO labeling so they can avoid products produced with the technology.¹⁴⁰

In the United States, more than eighty percent of processed foods are produced with genetic engineering.¹⁴¹ Ultra-processed foods make up an average of sixty percent of consumers’ diets.¹⁴² Biotech companies fear that disclosing GMOs in the United States will lead to a loss in profits.¹⁴³ They argue that labels mislead consumers to believe that

transgenic seed and herbicides are being affected by the problem, as herbicides can easily spread to both organic and conventional crops, some of which can be severely damaged by even small amounts of these more toxic herbicides.”).

¹³⁷ Sella-Villa, *supra* note 1, at 976.

¹³⁸ See *supra* note 9 and accompanying text.

¹³⁹ Compare Saby Ghoshray, *Genetically Modified Foods at the Intersection of the Regulatory Landscape and Constitutional Jurisprudence*, 41 AM. J. L. & MED. 223, 238 (2015) (discussing scientific studies demonstrating a range of ill effects from GMO consumption), with Andrew Pollack, *Genetically Engineered Crops Are Safe, Analysis Finds*, N.Y. TIMES (May 17, 2016), <http://nyti.ms/24Xdter> (discussing NAS study determining GMOs are safe for consumers).

¹⁴⁰ Acosta, *supra* note 37, at 209, <http://www.loc.gov/law/help/restrictions-on-gmos/restrictions-on-gmos.pdf>. According to a recent poll, ninety-three percent of Americans support mandatory GMO labeling. *Id.*

The same poll found three-fourths of Americans expressing concern regarding GMOs in food; nearly half indicating they were aware that many processed or packaged foods contain genetically modified ingredients; around half saying they would not eat genetically modified vegetables, fruits, and grains; three-quarters stating they would not eat genetically modified fish; and two-thirds saying they would not eat genetically modified meat.

Id.; see also Draft Guidance for Industry: Voluntary Labeling Indicating Whether Foods Have or Have Not Been Developed Using Bioengineering; Availability, 66 Fed. Reg. 4839, 4839-40 (Jan. 18, 2001) (discussing public comments requesting mandatory labeling of GMOs).

¹⁴¹ See *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 597 (discussing Vermont General Assembly’s legislative findings); see also Julie M. Muller, *Naturally Misleading: Fda’s Unwillingness to Define “Natural” and the Quest for Gmo Transparency Through State Mandatory Labeling Initiatives*, 48 SUFFOLK U. L. REV. 511, 514 (2015).

¹⁴² Alice Park, *You Won’t Believe How Much Processed Foods Americans Eat*, TIME MAG. (Mar. 9, 2016), <http://time.com/4252515/caloriesprocessedfood>.

¹⁴³ See generally Fredland, *supra* note 108, at 189 (discussing how European labeling schemes and stricter scientific standards hurt sales of GMOs).

GMOs are unsafe and should be avoided.¹⁴⁴ Further, biotech companies maintain that disclosing GMOs to consumers is unnecessary because GMOs products are as safe as non-GMO varieties.¹⁴⁵

In a democracy, however, the consumer is sovereign.¹⁴⁶ Consumer sovereignty is based on the assumption “that well-informed individuals are the best judges of their own welfare.”¹⁴⁷ Under this assumption, the market requires an informed consumer to function properly.¹⁴⁸ Informed consumers are able to select products based on their personal preferences.¹⁴⁹ This selection signals to the market the types of products that consumers desire.¹⁵⁰ The market is then able to respond and make more of these products available to consumers.¹⁵¹ The signal to the market, however, is skewed and inaccurate if consumers are initially

¹⁴⁴ See, e.g., Noah, *supra* note 23, at 771 (comparing GMOs labels to labeling foods created through radiation mutagenesis which misled consumers to believe the products were unsafe). Specifically, biotech companies purport that labeling creates an irrational fear that GMO products are unsafe and would deter consumers from purchasing nutritious foods. *Id.* at 779; cf. 44 *Liquormart, Inc. v. Rhode Island*, 517 U.S. 484, 503, 116 S. Ct. 1495, 1508, 134 L. Ed. 2d 711 (1996) (“Precisely because bans against truthful, nonmisleading commercial speech rarely seek to protect consumers from either deception or overreaching, they usually rest solely on the offensive assumption that the public will respond ‘irrationally’ to the truth.”). Applying the logic of 44 *Liquormart, Inc.*, leads one to the conclusion that the appropriate remedy to avoid GMO disclosure requirements “misleading” consumers to believe that GMOs are unsafe, would be for manufacturers to educate consumers as to why they have determined otherwise. See *Id.*

¹⁴⁵ Stephanie Amaru, *A Natural Compromise: A Moderate Solution to the Gmo & “Natural” Labeling Disputes*, 69 *FOOD & DRUG L.J.* 575, 582 (2014) (discussing “substantial equivalence” and GMOs as GRAS).

¹⁴⁶ See Neil W. Averitt & Robert H. Lande, *Consumer Sovereignty: A Unified Theory of Antitrust and Consumer Protection Law*, 65 *ANTITRUST L.J.* 713, 715 (1997) (“Simply put, consumer sovereignty is the state of affairs that prevails or should prevail in a modern free-market economy. It is the set of societal arrangements that causes that economy to act primarily in response to the aggregate signals of consumer demand, rather than in response to government directives or the preferences of individual businesses. The concept of consumer sovereignty goes so far as to embody at least some implicit notions about the proper relationship between the individual and the state. It is part of the Western world’s answers to the prescriptions of Marxism.”).

¹⁴⁷ Robert J. Brent, *Profits, Poverty, and Health Care: An Examination of the Ethical Base of Economics*, 24 *FORDHAM URB. L.J.* 667, 670 (1997).

¹⁴⁸ Averitt & Lande, *supra* note 146, at 716 (“The essence of consumer sovereignty is the exercise of choice. It is by choosing some goods or some options over others that consumers satisfy their own wants and send their signals to the economy. It is, therefore, critical that the exercise of consumer choice be protected.”).

¹⁴⁹ See *Id.* at 721 (discussing how consumer protection violations impair a consumer’s ability to choose between options).

¹⁵⁰ *Id.* at 716.

¹⁵¹ *Id.*

misled to purchase products that they do not truly desire because the government and private industry have deemed their desire irrational.¹⁵²

B. Consumer Protection and Private Industry

The desire for GMO disclosure is in line with a broader trend in consumer preference towards “natural” foods.¹⁵³ Industrialized agricultural methods in the United States focus primarily on maximizing the production of certain commodity crops regardless of any negative consequences.¹⁵⁴ Modern consumers, however, desire foods produced through sustainable agricultural methods that, in addition to economic profitability, also consider impacts to the environment and consumer health.¹⁵⁵

To ensure that they are purchasing the type of products that they desire, consumers must be informed. It is imperative that labels are accurate and easily discernible because consumers primarily obtain product information through disclosures on the packaging of the product.¹⁵⁶ Adequate disclosure requirements further the discovery of truth and contributes to the efficiency of the marketplace.¹⁵⁷

Furthermore, inadequate labeling policies may have a detrimental effect on a consumer’s ability to access the product information needed to properly signal the market.¹⁵⁸ For instance, the “natural” label is the most commonly used label on the market today.¹⁵⁹ The label is widely

¹⁵² *Id.* at 721 (discussing how consumer protection violations impair a consumer’s ability to choose between options).

¹⁵³ Lauren E. Handel, *A Practitioner's Guide to Defending "Natural" Food Labeling Litigation*, 7 KY. J. EQUINE, AGRIC. & NAT. RESOURCES L. 255, 256 (2015).

¹⁵⁴ Mary Jane Angelo, *Corn, Carbon, and Conservation: Rethinking U.S. Agricultural Policy in A Changing Global Environment*, 17 GEO. MASON L. REV. 593, 602 (2010).

¹⁵⁵ *Id.* at 648. Biotech companies, such as Monsanto, claim to be sustainable agricultural companies because they believe that modern chemicals and GMOs are the only way to sustain the food supply needed for a growing population in a warming climate. MONSANTO COMPANY, <http://www.monsanto.com/whoweare/pages/default.aspx> (last visited Feb. 21, 2017). On the other hand, many consumers believe that sustainable agriculture methods should focus on improving organic methods that have proven sustainable over thousands of years. Laurie Ristino, *Back to the New: Millennials and the Sustainable Food Movement*, 15 VT. J. ENVTL. L. 1, 16-17 (2013).

¹⁵⁶ Handel, *supra* note 153 (“FDA Commissioner Margaret Hamburg acknowledged that “[t]he public health importance of food labeling as an essential means for informing consumers about proper nutrition...”).

¹⁵⁷ Grocery Mfrs. Ass’n, 102 F.Supp.3d at 631–32 (quoting Nat’l Elec. Mfrs. Ass’n v. Sorrell, 272 F.3d 104, 114 (2d Cir. 2001)) (“Protection of the robust and free flow of accurate information is the principal First Amendment justification for protecting commercial speech, and requiring disclosure of truthful information promotes that goal.”).

¹⁵⁸ Handel, *supra* note 156; *see, e.g., infra* text accompanying notes 159-66.

¹⁵⁹ Allyson Weaver, *"Natural" Foods: Inherently Confusing*, 39 IOWA J. CORP. L. 657, 659 (2014) (“The term “natural” is the most frequently used assertion on new U.S. food products; products donning this label constituted nearly \$22 billion of food industry sales in 2008.”).

used because consumers desire “natural” foods, however, the FDA has failed to issue a formal ruling regarding the use of the term.¹⁶⁰ Informally, the FDA has determined that “natural” means that nothing synthetic or artificial has been added to a food that a consumer would not expect to be there.¹⁶¹ Under this broad interpretation, products can be labeled “natural” despite containing GMOs, high-fructose corn syrup, and other processed ingredients.¹⁶²

Many consumers filed complaints against food manufacturers claiming that they paid a premium price for natural products and were deceived by the advertising on the product.¹⁶³ Courts applied a reasonable consumer test and considered whether labeling GMOs as “natural” was likely to mislead a reasonable consumer acting reasonably under the circumstances.¹⁶⁴ The FDA’s informal definition was relevant to the court’s inquiry; however, the court’s primary consideration was what a reasonable consumer believed natural to mean.¹⁶⁵

Ultimately, food manufacturers were forced to settle with consumers who demanded damages and the removal of “natural” labeling from GMO products.¹⁶⁶ Additionally, the courts petitioned the FDA to formulate final rulings regarding use of the “natural” label.¹⁶⁷ In 2016, the FDA solicited public comment regarding “natural” labels with the intent to issue a formal a definition, however, a final ruling has yet to

¹⁶⁰ Handel, *supra* note 153 (“According to a 2010 study by Hartman Group, consumers largely associate both “organic” and “natural” with the “absence of pesticides, herbicides, growth hormones, antibiotics, and GMOs.” Yet, all of those things may be used in products labeled “natural.””).

¹⁶¹ Food Labeling: Nutrient Content Claims, General Principles, Petitions, Definition of Terms, 56 Fed.Reg. 60,421, 60,466 (Nov. 27, 1991); *see also* Handel, *supra* note 153, at 261 (“FDA policy defines “natural” as “meaning that nothing artificial or synthetic (including all color additives regardless of source) has been included in, or has been added to, a food that would not normally be expected to be in the food.””).

¹⁶² *Ault v. J.M. Smucker Co.*, No. 13 CIV. 3409 PAC, 2014 WL 1998235, at *19 (S.D.N.Y. May 15, 2014) (discussing how FDA’s informal definition allows manufactures to label GMOs as natural).

¹⁶³ *See generally* Handel, *supra* note 153 (discussing “natural” labeling litigation).

¹⁶⁴ *Ault*, 2014 WL 1998235, at *5 (“A “deceptive act” or “false advertisement” is a material statement that is “likely to mislead a reasonable consumer acting reasonably under the circumstances.””).

¹⁶⁵ *Id.* at *6; *see also* Handel, *supra* note 153, at 256 (discussing how consumers define natural).

¹⁶⁶ Handel, *supra* note 153, at 255 (discussing multi-million dollar settlements).

¹⁶⁷ Handel, *supra* note 153, at 261.

be published.¹⁶⁸ Notably, the USDA has also failed to issue formal rulings regarding the use of “natural.”¹⁶⁹

Although Vermont’s “natural” restriction was found to be unconstitutional, prior to the preemption language of the National Standard, Act 120 could have been revised to withstand judicial scrutiny.¹⁷⁰ A “natural” restriction must be drafted specifically in order to avoid impermissibly vague challenges and the possibility that the law could reach advertising that occurs out of State.¹⁷¹ Additionally, State legislatures must produce empirical evidence demonstrating a sufficient level of consumer deception caused by advertising GMOs as “natural” to justify the speech restriction.¹⁷²

Restricting manufacturers from labeling GMOs as “natural,” would inform consumers of additional non-GMO options available in the market.¹⁷³ The National Standard does not address the “natural” issue.¹⁷⁴ Despite the unconstitutional “natural” restriction, Vermont’s Act 120 was favorable to consumers because it required an immediately discernible.¹⁷⁵ On the contrary, the National Standard inhibits a consumer’s ability to determine whether a product is a GMO because it the disclosure cannot be accessed without the use of an electronic device.¹⁷⁶

A majority of modern consumers desire non-GMO food options.¹⁷⁷ In order to ensure this signal reaches the market, it is imperative that consumers can freely determine whether products contain GMOs.¹⁷⁸

¹⁶⁸ U.S. FOOD & DRUG ADMIN., <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm456090.htm> (last updated Sept. 9, 2016).

¹⁶⁹ Handel, *supra* note 153, at 263 (“The FSIS permits the term “natural” to be used in meat and poultry product labeling if: (1) The product does not contain any artificial flavor or flavoring, coloring ingredient, or chemical preservative (as defined in 21 CFR 101.22), or any other artificial or synthetic ingredient; and (2) the product and its ingredients are not more than minimally processed.”).

¹⁷⁰ See, e.g., *infra* text accompanying notes 171-72.

¹⁷¹ See *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 605

¹⁷² *Id.* at 638.

¹⁷³ See *infra* note 240 and accompanying text (discussing results of “natural” restriction).

¹⁷⁴ See National Bioengineered Food Disclosure Standard, 7 U.S.C. § 1639 (2016) (lacking “natural” restriction or definition).

¹⁷⁵ See *supra* § III (discussing differences between Act 120 and the National Standard).

¹⁷⁶ See, e.g., *infra* § III(A) (discussing QR code in lieu of “Produced with Genetic Engineering”).

¹⁷⁷ Handel, *supra* note 153, at 256.

¹⁷⁸ See *supra* text accompanying notes 146-152. The Non-GMO Project is a nonprofit organization dedicated to providing verified non-GMO options to consumers. THE NON-GMO PROJECT, <https://www.nongmoproject.org/about> (last visited Jan. 18, 2017). In light of consumer demand, many manufacturers voluntarily submit products for third party verification

Any government interference in the market should, therefore, only facilitate a consumer's ability to distinguish between non-GMO and GMO options.¹⁷⁹ Presently, however, the National Standard offers consumers little protection.¹⁸⁰

IV. VERMONT'S ACT 120 VS. THE NATIONAL STANDARD

In a democracy, the government's laws and policies must protect consumers' interests over the interests of private industry.¹⁸¹ Rather than protecting consumer sovereignty, the National Standard inhibits consumers from accessing the information they desire regarding the foods they consume.¹⁸² The National Standard delays disclosure to the consumer, limits the number of people who can access the label, and minimizes the number of products that require labeling under the law.¹⁸³ Vermont's mandatory labeling law, under a State labeling regime, was more effective at safeguarding consumer sovereignty because the law required an immediately discernible disclosure while allowing for needed experimentation in the area.¹⁸⁴

A. "Produced with Genetic Engineering" vs. QR Code

One significant difference between Vermont's Act 120 and the National Standard is the type of label proposed.¹⁸⁵ Vermont's law required an unambiguous label on the product that stated "Produced with Genetic Engineering."¹⁸⁶ In contrast, the National Standard leaves discretion to manufacturers to choose the type of label.¹⁸⁷ In lieu of an immediately discernible GMO disclosure, the law allows manufacturers

so that consumers can easily distinguish non-GMO products on the market. *Id.*; see, e.g., *infra* Appendix C, Figure 2.

¹⁷⁹ Lucia A. Reisch, *Consumer Sovereignty*, in *ENCYCLOPEDIA OF CONSUMER CULTURE* 324 (Dale Southerton ed., 2011).

¹⁸⁰ See, e.g., *supra* §II (analyzing disclosure requirements under the National Standard).

¹⁸¹ Averitt & Lande, *supra* note 146 and accompanying text; see also *Id.* at 715.

¹⁸² Stephen Dinan, *Obama Signs Bill Overturning Vermont's GMO labeling Law*, THE WASH. TIMES (Aug. 2, 2016), <http://www.washingtontimes.com/news/2016/aug/2/obama-signs-bill-overturning-vermonts-gmo-labeling/>.

¹⁸³ Heather Haddon, *Consumer Advocates Wary of Digitally Coded Food Labels*, WALL ST. J. (Aug. 3, 2016), <https://www.wsj.com/articles/smartphone-codes-on-food-labels-face-skepticism-1470216600>.

¹⁸⁴ See *infra* Part III (analyzing the effects of the National Standard on consumer sovereignty).

¹⁸⁵ Compare 7 U.S.C.A. § 1639b (b)(2)(D) (West) and Vt. Stat. Ann. tit. 9, § 3043 (b) (West); see also *infra* text accompany notes 187-88.

¹⁸⁶ VT. STAT. ANN. tit. 9, § 3043 (b) (West); see, e.g., *infra* Appendix B, Figure 1.

¹⁸⁷ 7 U.S.C.A. § 1639b (b)(2)(D) (West).

to use a QR code or phone number that consumers would have to scan or call in order to access information.¹⁸⁸

On its face, a QR code or phone number is meaningless to consumers.¹⁸⁹ QR codes are digitally readable images, similar to barcodes, that can be scanned using a dedicated smart phone with the appropriate mobile application software, or “app.”¹⁹⁰ Without scanning the code and waiting for the manufacturer’s link to load, the consumer learns nothing.¹⁹¹ On the contrary, a label that says “Produced with Genetic Engineering” immediately relays the information to the consumer without the use of an electronic device.¹⁹²

The label proposed by the National Standard requires that consumers possess a device and dedicated app capable of scanning the QR code.¹⁹³ Additionally, consumers will need an Internet connection or cellular data plan to access the manufacturer’s disclosure.¹⁹⁴ The technology requirements and significant time delays caused by the QR code raise significant concerns regarding whether consumers will be able to utilize them.¹⁹⁵

The National Standard promotes unequal access to GMO disclosures because the label cannot be read without a smart phone and Internet access.¹⁹⁶ Many poor and elderly, who lack access to these technologies, will not be able to view the disclosure.¹⁹⁷ Vermont’s label, as proposed by Act 120, promoted equal access to product information because it called for a label that was simple for consumers to understand and immediately discernible to the naked eye.¹⁹⁸

B. Foods Produced with Genetic Engineering vs. Foods Containing GMOs

In addition to the type of label proposed, another significant difference between Act 120 and the National Standard is the number of

¹⁸⁸ 7 U.S.C.A. § 1639b (b)(2)(D) (West); *see, e.g., infra* Appendix B, Figure 2.

¹⁸⁹ *See, e.g., infra* Appendix B, Figure 2.

¹⁹⁰ Haddon, *supra* note 183.

¹⁹¹ Haddon, *supra* note 183.

¹⁹² *See, e.g., infra* Appendix B, Figure 1.

¹⁹³ Haddon, *supra* note 183.

¹⁹⁴ Haddon, *supra* note 183.

¹⁹⁵ Haddon, *supra* note 183.

¹⁹⁶ CENTER FOR FOOD SAFETY, *President Obama Signs GMO ‘Non-labeling’ Bill, Leaves Millions of Americans in the Dark*, (July 29, 2016), available at <http://www.centerforfoodsafety.org/issues/976/ge-food-labeling/press-releases/4438/president-obama-signs-gmo-non-labeling-bill-leaves-millions-of-americans-in-the-dark>.

¹⁹⁷ *Id.*

¹⁹⁸ *See supra* text accompanying note 192.

products covered under the law.¹⁹⁹ Act 120 required labeling for foods produced entirely or in part by GMOs.²⁰⁰ Under Vermont's law, foods produced with genetic engineering required labeling regardless of the product's composition after processing.²⁰¹ The language of the law reflected Vermont's concerns regarding the means of production associated with biotechnology, such as gene manipulation, seed patents, and the heavy use of herbicides.²⁰²

In contrast, the National Standard ignores consumer concerns regarding the environmental consequences and ethical considerations that GMOs present.²⁰³ Rather than focusing on the means of production, Congress is primarily concerned with the composition of the end product.²⁰⁴ The National Standard only requires labeling for products containing GMOs postproduction.²⁰⁵ This allows the USDA to exclude many processed foods that lack genetically modified proteins after processing, despite initially being derived from GMOs.²⁰⁶

The National Standard also allows the USDA to determine a minimum percentage of GMO presence that would be required to trigger labeling.²⁰⁷ Consequently, the law allows the USDA to exempt products from labeling requirements even if they contain GMO proteins post-production.²⁰⁸ The significant percentage of processed foods that are produced with genetic engineering and the overwhelming consumer demand for disclosure warrant Congress modifying the National

¹⁹⁹ Compare 7 U.S.C.A. § 1639 (West) and VT. STAT. ANN. tit. 9, § 3043 (a) (West); see also *infra* text accompanying notes 200-09.

²⁰⁰ VT. STAT. ANN. tit. 9, § 3043 (a) (West).

²⁰¹ *Id.*

²⁰² See *supra* note 61 and accompanying text.

²⁰³ See *infra* text accompanying notes 204-09.

²⁰⁴ Dan Charles, *Congress Just Passed A GMO Labeling Bill. Nobody's Super Happy About It*, THE SALT: NPR (July 14, 2016, 5:34 PM), <http://www.npr.org/sections/thesalt/2016/07/14/486060866/congress-just-passed-a-gmo-labeling-bill-nobodys-super-happy-about-it>. Evidence suggests that a growing number of consumers are, however, concerned with how their food was produced and not just the end product that are consuming. Laurie Ristino, *Back to the New: Millennials and the Sustainable Food Movement*, 15 VT. J. ENVTL. L. 1, 16 (2013) (discussing changes in food preferences among younger generations).

²⁰⁵ Dan Charles, *Congress Just Passed A GMO Labeling Bill. Nobody's Super Happy About It*, THE SALT: NPR (July 14, 2016, 5:34 PM), <http://www.npr.org/sections/thesalt/2016/07/14/486060866/congress-just-passed-a-gmo-labeling-bill-nobodys-super-happy-about-it>.

²⁰⁶ *Id.*, see also *supra* text accompanying notes 141-42 (discussing amount of processed foods in American diet).

²⁰⁷ 7 U.S.C.A. § 1639b (B) (West).

²⁰⁸ *Id.*

Standard to incorporate more inclusive language, such as the requirements called for in Vermont's Act 120.²⁰⁹

C. State Labeling Requirements vs. Federal Preemption

In addition to the type of label allowed and the number of products that will require labeling, the National Standard also delays consumer access to disclosure requirements until July 29, 2018.²¹⁰ Vermont's Act 120 went into effect July 1, 2016, however, the State law was nullified four weeks later by the preemption provision in the National Standard.²¹¹ The National Standard affords the USDA another two years to determine the detailed requirements of the law.²¹²

During that time, the USDA must solicit the public for comment and conduct a study primarily aimed at examining potential issues surrounding QR code accessibility.²¹³ It naturally follows, therefore, that the USDA would require some time to implement the final rulings required under the National Standard. Vermont's labeling requirement, however, could have provided observational evidence regarding potential issues with implementing labeling laws if Congress had refrained from including a preemption provision in the law.²¹⁴

Many argue that agency professionals, who are familiar with the complex regulatory problems associated with labeling, are better equipped to implement laws such as the National Standard.²¹⁵ A State labeling system, however, allows legislatures to experiment with different policies, and observe actual consequences of their laws,

²⁰⁹ See *supra* text accompanying notes 199-208.

²¹⁰ 7 U.S.C.A. § 1639b (West).

²¹¹ Dan Charles, *Congress Just Passed A GMO Labeling Bill. Nobody's Super Happy About It*, THE SALT: NPR (July 14, 2016, 5:34 PM), <http://www.npr.org/sections/thesalt/2016/07/14/486060866/congress-just-passed-a-gmo-labeling-bill-nobodys-super-happy-about-it>.

²¹² 7 U.S.C.A. § 1639b (West).

²¹³ 7 U.S.C.A. § 1639b (West) ("The study . . . shall consider whether consumer access to the bioengineering disclosure through electronic or digital disclosure methods under this subchapter would be affected by the following factors:(A) The availability of wireless Internet or cellular networks.(B) The availability of landline telephones in stores.(C) Challenges facing small retailers and rural retailers.(D) The efforts that retailers and other entities have taken to address potential technology and infrastructure challenges.(E) The costs and benefits of installing in retail stores electronic or digital link scanners or other evolving technology that provide bioengineering disclosure information."). This suggests that the federal government recognizes, before the law has even taken effect, that the available method of disclosure will make it difficult for consumers to access the information being disclosed.

²¹⁴ See *infra* text accompanying notes 97-101 (discussing States acting as laboratories of democracy).

²¹⁵ See *infra* note 34 and text accompanying (discussing flexibility of federal agencies implementing statutes).

without negatively affecting the country on a national level.²¹⁶ State labeling requirements and the amount of controversy surrounding GMO labeling, warrant excluding preemption language from the National Standard to allow States to continue experimenting with the matter.²¹⁷

Sometimes federal preemption makes sense in light of changes in public opinion.²¹⁸ In areas where there is substantial disagreement, however, State legislation allows for variances in the law until more States reach a consensus.²¹⁹ Congress began debating GMO labeling in 1999.²²⁰ State legislatures have been examining the controversies surrounding GMOs for decades as well.²²¹ Across the United States, legislative proposals have included everything from outright bans on GMOs,²²² to labeling requirements,²²³ to preventative measures aimed at protecting the continued use of biotechnology.²²⁴

Hawaii's legislators cited concerns over cross-contamination, human health, and the environment to support attempted county-wide GMO bans.²²⁵ Vermont's legislature concluded that existing evidence

²¹⁶ *New State Ice Co.*, 285 U.S. at 311 (Brandeis, J., dissenting).

²¹⁷ See *infra* text accompanying note 101 (discussing deference to State legislature regarding matters of controversy).

²¹⁸ See, e.g., *infra* note 228 and accompanying text.

²¹⁹ *Obergefell v. Hodges*, 135 S. Ct. 2584, 2643 (2015).

²²⁰ See *supra* note 59 (discussing attempts at passing federal preemption provisions).

²²¹ Fredland, *supra* note 108 (discussing Europe's fear the GMOs cause health and environmental problems unlike their American counterparts). See also Amy Harmon, *A Lonely Quest for Facts on Genetically Modified Crops*, N.Y. TIMES (Jan. 4, 2014), available at http://www.nytimes.com/2014/01/05/us/on-hawaii-a-lonely-quest-for-facts-about-gmos.html?_r=0 (discussing Hawaii's unrest over the GMO debate with strong feelings on both sides of the argument). Opponents of GMOs cite self-interested science, lack of peer review, and big business influence in politics, as reasons to distrust those who oppose labeling GMOs. See *supra* Part I, Section B (discussing problems with current scientific evidence and policies surrounding GMOs). GMOs supporters argue those concerns are not rooted in sound science. Dorothy Du, *Rethinking Risks: Should Socioeconomic and Ethical Considerations Be Incorporated into the Regulation of Genetically Modified Crops?*, 26 HARV. J.L. & TECH. 375, 398 (2012) ("Throughout the development of the debate over GMOs in the United States, the government has painted fears of genetic engineering as irrational, emotionally tainted, and potentially dangerous.").

²²² See, e.g., *infra* note 225 and accompanying text.

²²³ See, e.g., *infra* note 226 and accompanying text.

²²⁴ See, e.g., *infra* note 227 and accompanying text.

²²⁵ Laura Murphy, Kenneth Noga, & Mark Rose, *Seeking Pure Fields: The Case Against Federal Preemption of State Bans on Genetically Engineered Crops*, 49 U.S.F. L. REV. 503, 504 (2015). While Hawaii's citizens have attempted to ban GMOs, so far their efforts have been struck down in federal court as preempted by the Plant Protection Act ("PPA"); see *Id.* (discussing Hawaii's attempts to ban GMO crops and federal preemption issues under the PPA). The PPA was enacted primarily to protect agriculture from invasive non-indigenous plant species. *Id.* at 509. Ironically, the citizens of Hawaii argue that GMOs plants are invasive and therefore endangering their local agriculture, and yet, the PPA prevents them from eradicating

regarding the safety of GMOs was biased, invalid, and lacked sufficient integrity to determine long-term effects, prompting it to pass a labeling law mandating disclosure.²²⁶ In contrast, Indiana adopted a resolution in their Senate stating that “sound science” conducted by the agricultural industry would be accepted in lieu of a precautionary approach.²²⁷

The question remains: is it proper policy to pass a federal preemption statute with this much ongoing debate and conflict?²²⁸ The assorted States have a long-standing tradition of diversity.²²⁹ Operating

the non-indigenous plants from the islands. *Robert Ito Farm, Inc. v. Cty. of Maui*, 111 F.Supp.3d 1088, 1104 (D.Haw. 2015), *appeal dismissed* (Jan. 26, 2016); *but see* Murphy et al., *supra*, at 521 (discussing preemption avoidance by passing laws “for a purpose other than eradicating or otherwise controlling plants because they are plant pests or noxious weeds”).

²²⁶ See *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 579-98.

²²⁷ 2015 IN S.R. 48 (NS), available at <https://iga.in.gov/legislative/2015/resolutions/senate/simple/48#document-d6c2b04d> (“The availability of modern agriculture technologies such as . . . genetically engineered or enhanced traits . . . are critically important tools that allow farmers to expand yields, reduce environmental impacts, improve profitability and provide a safe, healthy, abundant, and affordable food supply . . .”). Indiana’s deference towards biotech manufacturers is based on the industry’s long term success in providing safe food to Americans. *Id.*

²²⁸ Sometimes federal preemption does make sense in light of changes in public opinion. In 2015, the United States Supreme Court ended a long standing debate amongst the States regarding the legality of same sex marriage in *Obergefell v. Hodges*. 135 S.Ct. at 2584 (holding that State bans on same-sex marriage are unconstitutional). Justice Alito, writing in dissent, notes that:

[t]he system of federalism established by our Constitution provides a way for people with different beliefs to live together in a single nation. If the issue of same-sex marriage had been left to the people of the States, it is likely that some States would recognize same-sex marriage and others would not. It is also possible that some States would tie recognition to protection for conscience rights.

Id. at 2643. While a ban on state labeling does not reflect national public opinion, at the time that *Obergefell* was decided, the Supreme Court decision mirrored public opinion favoring national legalization of gay marriage. Patrick O’Connor, *Poll Finds Backing for Gay Marriage and a Split on Health Law*, WALL ST. J. (June 25, 2015 12:06 AM), <http://www.wsj.com/articles/poll-finds-backing-for-gay-marriage-and-a-split-on-health-law-1435189035>. One could argue that States being allowed to legislate gay marriage prior to the recent Supreme Court decision encouraged the evolution of national public opinion:

Over the last few years, public opinion on marriage has shifted rapidly. In 2009, the legislatures of Vermont, New Hampshire, and the District of Columbia became the first in the Nation to enact laws that revised the definition of marriage to include same-sex couples, while also providing accommodations for religious believers. In 2011, the New York Legislature enacted a similar law. In 2012, voters in Maine did the same, reversing the result of a referendum just three years earlier in which they had upheld the traditional definition of marriage.

Obergefell, 135 S.Ct. at 2615.

²²⁹ The federalist system in the United States allows for diverse legislation in areas like “legalized prostitution or gambling, and different policies on drugs and alcohol.” Professor

under a federalist system allows each State to properly legislate to protect the diverse and particular interests of its citizens.²³⁰ Additionally, a federalist system allows States to experiment with different policies in a way that will not negatively affect the country on a national level.²³¹

Although the concept of laboratories of democracy was popularized long ago, it has been a reoccurring theme throughout American jurisprudence.²³² In the past, the court has deferred to state legislators' environmental concerns, particularly when substantial uncertainty exists.²³³ Individuals disagree about whether or not GMOs are safe for consumption and the environment,²³⁴ and consequently, disagree about whether or not products containing GMOs should be labeled.²³⁵ Federal preemption inhibits State experimentation which would provide a larger body of scientific evidence about labeling and other issues surrounding GMOs generally.²³⁶

Lynn A. Baker & Professor Sanford Levinson, *Twenty-Year Legacy of South Dakota v. Dole Dole Dialogue*, 52 S.D. L. REV. 468, 475 (2007).

²³⁰ The founders intended "not only to empower the political branches to check each other, but also to ensure that they would consider state prerogatives in performing their functions." Bradford R. Clark, *Separation of Powers As A Safeguard of Federalism*, 79 TEX. L. REV. 1321, 1328-29 (2001). The structure of the federal government was designed to be inefficient so that, in the absence of successful federal legislation, States could continue to legislate locally. Clark, *supra*, at 1371. Under traditional dual federalism, "the federal and state governments were regarded as equal in their separate spheres, and the congressional powers, especially under the commerce and taxing and spending clauses, were construed strictly." Murray Dry, *Federalism and the Constitution: The Founders' Design and Contemporary Constitutional Law*, 4 CONST. COMMENT. 233, 236 (1987). After The New Deal, the federal government was given considerably more power and the number of existing executive agencies doubled. Larry D. Kramer, *Putting the Politics Back into the Political Safeguards of Federalism*, 100 COLUM. L. REV. 215, 230 (2000). Some argue agencies are better equipped to implement statutes. See BRESSMAN ET AL., *supra* note 34, at 473. However, agency action constrains State authority which would otherwise be free to govern in the absence of federal legislation intended to be difficult to enact. Clark, *supra*, at 1324.

²³¹ *New State Ice Co.*, 285 U.S. at 311 (Brandeis, J., dissenting).

²³² See generally Ann Althouse, *Vanguard States, Laggard States: Federalism and Constitutional Rights*, 152 U. PA. L. REV. 1745, 1755 (2004) (discussing cases that cite Justice Brandeis' laboratories of democracy philosophy). The judiciary has long held that deference should be afforded to the States' legislatures, particularly in matters where the States were "undertaking extensive and serious evaluation." *Id.* at 1752 (citing Justice O'Connor concurring in *Washington v. Glucksberg*, 521 U.S. 702, 117 S. Ct. 2258, 138 L. Ed. 2d 772 (1997)). Prior to the passage of the National Standard, States were evaluating GMOs, with twenty-six states considering legislation. See *supra* text accompanying notes 225-27; see also *supra* text accompanying notes 94-96.

²³³ See *supra* text accompanying notes 99-101.

²³⁴ See *supra* text accompanying notes 102-04.

²³⁵ See *supra* notes 221-27 and accompanying text (discussing how states disagree about GMO labeling).

²³⁶ See *supra* note 119.

Excluding preemption language from the National Standard would have allowed States to require GMO labeling so long as it were possible for manufactures to comply with both federal and state requirements.²³⁷ In addition to the QR code required under the National Standard, States could require an additional disclosure stating “Produced with Genetic Engineering,” such as Act 120’s disclosure requirement.²³⁸ In the future, scientists, consumers, and politicians, would be able to collectively revisit the issues surrounding GMO labeling, compare and contrast each State’s system, and reexamine the wide variety of data that would become available.²³⁹

V. CONCLUSION

The United States has traditionally taken a proactive approach towards GMO regulation that is favorable to industry. In theory, however, consumers are sovereign. The majority of consumers favor disclosure so they can purchase non-GMO products. If the consumer is truly sovereign, the government must pass legislation that safeguards consumer demand for disclosure. Instead, the National Standard nullifies current GMO labeling requirements, delays disclosure for another two years, minimizes the number of products that will require labeling, and limits the number of people who will have access to the label.

Vermont’s Act 120 contained provisions that protected consumer sovereignty. A more inclusive range of products required labeling under Act 120. The law required a label that was immediately discernible to consumers without the need of additional devices or Internet connection which increased the likelihood that more consumers were able to make informed decisions when purchasing products. The

²³⁷ See *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 609. The Supremacy Clause provides that “the Laws of the United States . . . shall be the supreme Law of the Land. . . .” U.S. CONST. art. VI, cl. 2. Federal preemption doctrine prohibits states from passing laws when Congress has expressed its authority over a particular area of law. Acosta, *supra* note 37, at 218, <http://www.loc.gov/law/help/restrictions-on-gmos/restrictions-on-gmos.pdf>. On the other hand, the Tenth Amendment states that powers not expressly delegated to the national government in the Constitution are reserved for the States. *Maine*, 477 U.S. at 138. Environmental conservation efforts have traditionally been enacted under the States’ policing powers which authorize States to pass laws “to protect the public health, safety and welfare” of its citizens. NEMA, 272 F.3d 104, 109 (2d Cir. 2001). Specifically, State legislatures have linked GMO labeling to their legitimate interests in prevention of consumer deception and potential health problems, as well as, protection of their citizens’ religious practices and environment. *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 597-98.

²³⁸ Conflict preemption exists (1) where it is “impossible for a private party to comply with both state and federal requirements,” or (2) where state law “stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.” *Grocery Mfrs. Ass’n*, 102 F.Supp.3d at 615 (citing *Freightliner Corp. v. Myrick*, 514 U.S. 280, 287, 115 S.Ct. 1483, 131 L.Ed.2d 385 (1995)).

²³⁹ See *supra* text accompanying note 216.

revised natural restriction would also inform consumers of additional non-GMO options available in the market.²⁴⁰

The food industry argued that Vermont's law created a patchwork of State labeling laws that burdened manufacturers and subsequently increased prices.²⁴¹ It claims that the National Standard promotes consumer sovereignty through uniform labeling requirements.²⁴² The food industry asserts that a QR code gives consumers access to more detailed product information than could reasonably be printed on a product's packaging.²⁴³

The benefits of a QR code are worth mentioning, however, they tell consumers nothing if they are not able to access the link nor does it address the ongoing delay in importing any actual information to the consumer. After decades of lobbying for a GMO labeling ban, the biotech industry reversed its position and backed a GMO labeling requirement. Clearly, the biotech industry supported the National Standard because the law is favorable to manufacturers. The National Standard bans actual GMO disclosures like Vermont's and replaces them with QR codes that, at face value, do not relay disclosures to consumers.

Ultimately, the National Standard provided the biotech industry their initial goal of banning State labeling laws, while purporting to afford consumers the disclosure they desire. The significant percentage of processed foods that are produced with genetic engineering and the overwhelming consumer demand for disclosure warrant Congress modifying the National Standard to incorporate more inclusive language. Further, the amount of controversy surrounding GMO labeling, warrants repealing preemption language from the National Standard to allow States to continue experimenting with the matter.

A democratic, free-market economy requires that Congress prioritize consumer interests over private industry and enact laws that protect consumer sovereignty. Instead, the federal government sided with private biotech companies by enacting the National Standard despite a majority of consumers supporting disclosure. If the consumer is truly sovereign, Congress must pass adequate disclosure laws so that a consumer may immediately determine whether foods have been produced with "weird science."

²⁴⁰ Stephanie Amaru, *A Natural Compromise: A Moderate Solution to the Gmo & "Natural" Labeling Disputes*, 69 FOOD & DRUG L.J. 575, 599 (2014) ("A consumer would be able to walk into a store and no longer be restricted to just organic foods when perusing for GMO-free food products."). Products that contain GMOs cannot be labeled as organic. *Id.* at 588. A product may not be a GMO but also not meet the strict requirements needed for an organic label. *Id.* at 599. If GMOs could not be labeled as natural, a consumer wishing to avoid GMOs could confidentially purchase foods labeled "natural" or "organic." *Id.*

²⁴¹ Lowe, *supra* note 87.

²⁴² Lowe, *supra* note 87.

²⁴³ Haddon, *supra* note 183.

Appendix A: Sample Ohio Statute²⁴⁴

No. 120. An act relating to food produced with genetic engineering.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF OHIO:

Section 1. Findings

(1) The FDA does not require independent testing of genetically modified foods.

(2) Current studies accepted by the FDA are biased due to financial conflicts of interest.

(3) There is a lack of any long term or epidemiologic studies.

(4) Conflicting scientific literature displays that genetically modified organisms (“GMOs”) potentially pose risks to the health, safety, agriculture, and environment.

(5) GMOs are increasingly available in our food source.

(6) Federal law does not require that GMOs are labeled with an immediately discernible label visible to the naked eye.

Section 2. Purpose

(1) Public health and food safety. Establish a system by which persons may make informed decisions regarding the potential health effects of the food they purchase and consume and by which, if they choose, persons may avoid potential health risks of food produced from genetic engineering.

(2) Environmental impacts. Inform the purchasing decisions of consumers who are concerned about the potential environmental effects of the production of food from genetic engineering.

(3) Consumer confusion and deception. Reduce and prevent consumer confusion and deception and promote the disclosure of factual information on food labels to allow consumers to make informed decisions;

(4) Promote economic development. Create additional market opportunities for those producers who are not certified organic producers and whose products are not produced using genetic engineering and enable consumers to make informed purchasing decisions; and

(5) Protect religious and cultural practices. Ensure consumers are provided with data from which they may make informed decisions for personal, religious, moral, cultural or ethical reasons.

Section 3. Definitions

²⁴⁴ If Congress should repeal the preemption provision of the National Standard, this sample statute, inspired by language from labeling laws in Vermont and Maine, would effectively safeguard the ability of Ohio citizens to choose between non-GMO and GMO options on the market. *See* Labeling of Food Produced with Genetic Engineering, 9 V.S.A. §§ 3041-3048 (2015); *see also* Genetically Engineered Products, 22 M.R.S.A. § 2591-2596 (2014). Revisions to the “natural” restriction have been made in light of GMA’s challenges to Act 120. *See supra* §§ 3(5), 5).

(1) “Advertising” means act of providing notice or announcement in a public medium promoting a product or service occurring within the geographic boundaries of Ohio.

(2) “Food” means food intended for human consumption.

(3) “Genetic engineering” is a process by which a food is produced from an organism or organisms in which the genetic material has been changed through the application of:

(a) in vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) techniques and the direct injection of nucleic acid into cells or organelles; or

(b) fusion of cells (including protoplast fusion) or hybridization techniques that overcome natural physiological, reproductive, or recombination barriers, where the donor cells or protoplasts do not fall within the same taxonomic group, in a way that does not occur by natural multiplication or natural recombination.

(c) Genetic engineering does not encompass a change of genetic material through the application of traditional breeding techniques, conjugation, fermentation, traditional hybridization, in vitro fertilization, or tissue culture.

(4) “Manufacturer” means a person who:

(a) produces a processed food or raw agricultural commodity under its own brand or label for sale in or into the State;

(b) sells in or into the State under its own brand or label a processed food or raw agricultural commodity produced by another supplier;

(c) owns a brand that it licenses or licensed to another person for use on a processed food or raw commodity sold in or into the State;

(d) sells in, sells into, or distributes in the State a processed food or raw agricultural commodity that it packaged under a brand or label owned by another person;

(e) imports into the United States for sale in or into the State a processed food or raw agricultural commodity produced by a person without a presence in the United States; or

(f) produces a processed food or raw agricultural commodity for sale in or into the State without affixing a brand name.

(5) “Natural Food” means food

(a) that has not been treated with preservatives, antibiotics, synthetic additives, artificial flavoring or artificial coloring; and

(b) that has not been processed in a manner that makes such food significantly less nutritive; and

(c) that has not been genetically engineered, as defined in section 3(3), provided this subparagraph shall apply only to food that is.

(d) Processing of food by extracting, purifying, heating, fermenting, concentrating, dehydrating, cooling or freezing shall not, of itself, prevent the designation of such food as “natural food.”

(6) “Organism” means any biological entity capable of replication, reproduction, or transferring of genetic material.

(7) “Signage” means signs on commercial or public display occurring within the geographic boundaries of Ohio.

Section 4. Disclosure Requirement

(1) Except as set forth in section 6, food offered for sale by a retailer after July 1, 2017 shall be labeled as produced entirely or in part from genetic engineering if it is a product:

- (a) offered for retail sale in Ohio; and
- (b) entirely or partially produced with genetic engineering.

(2) If a food is required to be labeled under subsection (1) of this section, it shall be labeled as follows:

(a) in the case of a packaged raw agricultural commodity, the manufacturer shall label the package offered for retail sale, with the clear and conspicuous words “produced with genetic engineering”;

(b) in the case of any raw agricultural commodity that is not separately packaged, the retailer shall post a label appearing on the retail store shelf or bin in which the commodity is displayed for sale with the clear and conspicuous words “produced with genetic engineering”; or

(c) in the case of any processed food that contains a product or products of genetic engineering, the manufacturer shall label the package in which the processed food is offered for sale with the words: “partially produced with genetic engineering”; “may be produced with genetic engineering”; or “produced with genetic engineering.”

(3) This section and the requirements of this chapter shall not be construed to require:

(a) the listing or identification of any ingredient or ingredients that were genetically engineered; or

(b) the placement of the term “genetically engineered” immediately preceding any common name or primary product descriptor of a food.

Section 5. “Natural” Restriction

(1) Commencing July 1, 2017 a food product produced entirely or in part from genetic engineering shall not be labeled on the product, in signage, or in advertising as “natural,” “naturally made,” “naturally grown,” “all natural,” or any words of similar import.

(2) This restriction is not to be construed to apply to Internet advertising occurring outside the geographic boundaries of Ohio.

Section 6. Exemptions

(1) Section 4 disclosure requirement does not apply to foods containing meat or poultry, the labeling of which requires approval by the USDA under the Federal Meat Inspection Act and the Poultry Products Inspection Act.

(2) A manufacturer or retailer may obtain an exemption for any food grown, raised, or produced without the knowing or intentional use of food or seed produced with genetic engineering by providing its own sworn statement, or verification from an independent organization, that the food has not been knowingly or intentionally produced with genetic engineering and has been segregated from and has not been knowingly or intentionally commingled with food that may have been produced with genetic engineering at any time.

Section 6. Severability

If any provision of this chapter or its application to any person or circumstance is held invalid or in violation of the Constitution or laws of the United States or in violation of the Constitution or laws of Ohio, the invalidity or the violation shall not affect other provisions which can

be given effect without the invalid provision or application, and to this end, the provisions of this chapter are severable.

Section 7. Penalty

A person who violates this chapter commits a civil violation for which a fine may be assessed that may not exceed \$1,000 per day per misbranded product per sales location.

Section 8. Final Rule

The Attorney General may adopt by rule requirements for the implementation of this chapter that include:

- (1) a requirement that the label required for food produced from genetic engineering include a disclaimer that the Food and Drug Administration does not consider foods produced from genetic engineering to be materially different from other foods; and
- (2) a requirement that a label required under Section 4 identify food produced entirely or in part from genetic engineering in a manner consistent with requirements in other jurisdictions for the labeling of food, including the labeling of food produced with genetic engineering.

Appendix B: Act 120 vs. The National Standard

Figure 1. Example of a GMO label as proposed by Vermont's Act 120.²⁴⁵



²⁴⁵ Annie Gasparro & Jacob Bunge, *GMO Labeling Law Roils Food Companies*, WALL ST. J. (Mar. 20, 2016), available at <http://www.wsj.com/articles/gmo-labeling-law-roils-food-companies-1458510332> (photo by Price Chopper).

Figure 2. Example of a GMO label as proposed by the National Standard.²⁴⁶



²⁴⁶ Haddon, *supra* note 183.

Appendix C: Additional Labeling

Figure 1. Natural advertising that appears on the front of a product.²⁴⁷



²⁴⁷ Amy Rushlow, *The FDA Scrambles to Define the Meaning of 'Natural' Food Label*, YAHOO! BEAUTY (Nov. 12, 2015), <https://www.yahoo.com/beauty/the-fda-scrambles-to-find-meaning-to-the-natural-190933024.html> (photo by Frito-Lay).

Figure 1. The Non-GMO Project certification that appears on the front of a product.²⁴⁸



²⁴⁸ Amy Mayer, *How Your Food Gets the 'Non-GMO' Label*, THE SALT: NPR (Jan. 20, 2015), <http://www.npr.org/sections/thesalt/2015/01/20/378361539/how-your-food-gets-the-non-gmo-label>.