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The Health Consequence of Genetically Modified Organisms and Lack of Regulation: Genetically Engineered Food Linked to Rise in Autism Prevalence

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Genetically modified organisms ("GMOs") and genetically engineered foods are now known health risks.[1] GMOs were developed and then used rapidly throughout the United States as an exciting technological advance, without assessment of potential environmental and human health impacts.[2] As a result, 80% of food in the United States contains GMOs, and the United States continues to avoid labeling or restrictive policy of the industry.[3] Compared to the European Union's highly restrictive policies, which include strict GMO labeling, limits on imports, and extensive testing, the United States appears to be doing nothing.[4] GMO consumption has now been linked to a rise in the number of autism cases; where a genetic risk already exists, the consumption of GMOs may catalyze the risk of autism.[5] The United States, as a matter of human health and environmental concern, should implement a labeling scheme and GMO regulatory policy.

The impact of the environment on human health is now undeniable. Science has proven chemical exposure, whether inhaled or consumed through household products and food, adversely impacts human health.[6] The connection between consumption of food containing hazardous chemicals and the resulting health effects has been straightforwardly established.[7] The most current debate and investigation, however, involve genetically modified food containing GMOs.[8] Studies suggest GMOs adversely affect human health, including causing allergic reactions, illness, and toxic effects similar to those of more common illness-causing chemicals.[9] The likelihood of these unfortunate health effects has increased at the same time as 80% of the processed food in the United States has come to contain GMOs.[10]

Further, the proliferation of GMOs parallels the rapid increase of autism diagnoses.[11] One out of every eighty-eight children in the United States is diagnosed with autism.[12] The linkage between GMOs and the increasing prevalence of autism cases cannot be isolated as one factor but a myriad.[13] Most research around causes and prevention of autism has targeted genetics, yet "there's genetics and there's environment. And genetics don't change in such short periods of time . . . ."[14] Since genetics are more static than other factors, the time has come to look at environmental factors. Studies have already begun exhausting research on the effect of prenatal exposure to toxic chemicals and other environmental factors on autism.[15] Chief among the untapped factors contributing to the rise of autism in the United States is the correlation between the widespread use and consumption of GMOs and the increase in cases of autism.

Several reports acknowledge the relationship between diet and autism. This correlation has been succinctly explained by Dr. Wallinga of the Institute for Agriculture and Trade Policy as "to better address the explosion of autism, it's critical we consider how unhealthy diets interfere with the body's ability to eliminate toxic chemicals" which leads to an increase in developmental health problems such as autism.[16] Soy, milk, and starches are included as some of the main foods reported to affect autism.[17] The commonalities of these specific food products make it difficult to call their connection to autism coincidental.[18] Starches are made almost entirely from genetically modified corn, soy is the leading GMO crop, and most milk is laden with rBGH hormone.[19]

It can be deduced that as consumption of GMOs is increasingly difficult to avoid, so too are the growing health risks associated with GMOs. Despite this problem, the United States still lacks a basic GMO-labeling scheme, let alone any other comprehensive policy. Rather, confronted with an issue affecting human health, the United States has continued to encourage GMO production without implementing policy to protect human health.[20]

As compared to the action Europe has taken, it appears as though the United States is doing very little. Europe applies the precautionary principle, strictly regulating genetically engineered foods.[21] Conversely, the United States approved GMOs under the National Environmental Policy Act,[22] the U.S. Food and Drug Administration merely allows voluntary GMO labeling on consumer food products, and a U.S. Department of Agriculture mechanism inconsistently regulates crops.[23] The United States merely provides a space for companies to submit crop testing data with no independent verifying body.[24] Alternatively, crop testing in Europe has been more successful through accountability mechanisms, including use of an independent agency that provides independent verification.[25]

On the heels of the Supreme Court's decision to deny an appeal to reverse a decision to allow the extension of GMO patent exhaustion,[26] the United States needs to steadily change the course of GMOs' threat to health for future generations.[27] Exposure to GMOs is a threat to every individual's health, but for those with a genetic predisposition for autism (linked to rare genetic mutations) it is important to identify and take action on those factors that are identified as contributing to the environmental influence that can catalyze the genetic risk.[28]

For the sake of lessening the risk of autism by decreasing the impact of environmental harm, the United States can choose

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from several approaches. For example, the United States government could successfully, and to its end, employ the precautionary principle. The precautionary principle states "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[29] It can be argued that the United States is a persistent objector to the precautionary principle on the international level.[30] However, the United States still has an overt legal obligation under superseding international human rights law to address the known harm of GMOs.[31]

At the most basic human level where GMOs are at issue, article 12 of the International Covenant on Economic, Social and Cultural Rights is invoked: humans have the right to the highest attainable standard of physical health as well as the improvement of environmental hygiene and the right to healthy development of the child.[32] Specifically, with respect to autism, the United States' obligation to take steps to lessen the health impacts of GMOs points directly to right of children to the "highest attainable standard of health," under article 24 of the Convention on the Rights of the Child.[33]

Ultimately, as the strength of the connection between GMOs, the environment, and autism continues to grow, the United States government needs to act. The paths the government can take are unlimited, starting with either mandatory GMO labeling or an all out ban on GMOs. In between lay an entire spectrum of policy approaches to lessen the health risks posed by GMOs, and in taking action, the United States has a chance to lessen the number of children on a different spectrum; decreasing environmental impact on the genetic risks of autism.

Endnotes: The Health Consequence of Genetically Modified Organisms and Lack of Regulation: Genetically Engineered Food Linked to Rise in Autism Prevalence

1 *See GMO Facts*, Non GMO Project, http://www.nongmoproject.org/learn-more/ (last visited Apr. 28, 2014).

2 *See Executive Summary*, Genetically Modified Organism Exploratory Comm., http://www.macalester.edu/~montgomery/GMOs2.htm (last visited Apr. 28, 2014); *see also Statement: No Scientific Consensus on GMO Safety*, Eur. Network of Scientists for Social & Envt'l Responsibility (Oct. 10, 2013)., http://www.ensser.org/increasing-public-information/no-scientific-consensus-on-gmo-safety/

3 *See GMO Facts*, *supra* note 1.

4 *See* Diahanna Lynch and David Vogel*, The Regulation of GMOs in Europe and the United States: Case-Study of Contemporary European Regulatory Politics*, Council on Foreign Relations (Apr. 5, 2001), http://www.cfr.org/agricultural-policy/regulation-gmos-europe-united-states-case-study-contemporary-european-regulatory-politics/p8688.

5 *See* Renee Dufault, *Study Links Autism with Industrial Food, Environment*, Inst. for Agric. & Trade Policy (Apr. 11, 2012), http://www.iatp.org/documents/study-links-autism-with-industrial-food-environment.

6 *See Health Effects from Chemical Exposure*, Missouri Dep't of Health & Senior Services, http://health.mo.gov/living/environment/hazsubstancesites/healtheffects.php (last visited Apr..28, 2014).

7 *See* Dufault, *supra* note 5.

8 *See GMO Facts*, *supra* note 1.

9 *See* Jeffrey Smith, *Spilling the Beans: Unintended GMO Health Risks*, Organic Consumers Ass'n (Mar. 2008), http://www.organicconsumers.org/articles/article_11361.cfm.

10 *See GMO Facts, supra* note 1.

11 *See id.*; *see also Autism Prevalence Rises to 1 in 88*, Autism Speaks (Mar. 29, 2012), http://www.autismspeaks.org/science/science-news/autism-prevalence-rises-1-88.

12 *Autism Prevalence Rises to 1 in 88*, *supra* note 11.

13 *See* Thomas Insel, *The New Genetics of Autism – Why Environment Matters*, Nat'l Inst. of Mental Health (Apr. 4, 2012), http://www.nimh.nih.gov/about/director/2012/the-new-genetics-of-autism-why-environment-matters.shtml.

14 Marla Cone, *New Study: Autism Linked to Environment*, Scientific Am. (Jan. 9, 2009), http://www.scientificamerican.com/article/autism-rise-driven-by-environment.

15 *See Environmental Factors in Autism Initiative*, Autism Speaks, http://www.autismspeaks.org/science/research-initiatives/environmental-factors-autism-initiative (last visited Feb. 22, 2014); *see also* Traci Pedersen, *New Studies Support Environmental Link to Autism*, Psych Cent. (May 4, 2013), http://psychcentral.com/news/2013/05/05/new-studies-support-environmental-link-to-autism/54445.html (explaining that prenatal exposure to air pollution increases the likelihood of having a child with autism).

16 *See* Dufault *supra* note 5

17 *See* Dufault *supra* note 5

18 *See* Dufault *supra* note 5

19 *See GMO Risks*, GMO Awareness, http://gmo-awareness.com/all-about-gmos/gmo-risks/ (last visited Feb. 22, 2014); rBGH is a genetically "engineered artificial hormone" created by the Monsanto Corporation for injecting into cows so they produce more milk but has been the source of growing concern and controversy amongst farmers, consumers, and scientists. *rBGH*, Sustainable Table, http://www.sustainabletable.org/797/rbgh (last visited May 9, 2014).

20 *See* Brian Tokar, *Deficiencies in Federal Regulatory Oversight of Genetically Engineered Crops*, Environmental Commons (June 2006), http://environmentalcommons.org/RegulatoryDeficiencies.html.

21 *Id*.

22 National Environmental Policy Act of 1969, 42 U.S.C. § 4332 (2006).

23 *See* Tokar, supra note 20 (outlining these U.S. federal agencies and their purview over GMO regulation).

24 *See GMO Myths and Truths Report*, Earth Open Source, http://earthopensource.org/index.php/2-science-and-regulation/2-1-myth-gm-foods-are-strictly-regulated-for-safety (last visited May 9, 2014).

25 *Id*.

26 The Supreme Court's ruling in favor of Monsanto to allow for an extension of patent exhaustion shows that the United States is moving in the opposite direction required for the health and safety of U.S. citizens. The ruling allows for continued patents on seed genes and plant varieties. Monsanto Corporation is the chief holder of these patents. Extending the exhaustion of these patents allows for Monsanto to hold a monopoly on self-replicating seeds, creating a market and development disadvantage to any farmer and allowing for the proliferation of GMOs to continue unbridled by regulation. *See Patent Exhaustion*, Seed Matters, http://www.seedmatters.org/patent-exhaustion/ (last visited May 9, 2014).

27 *See Top U.S. Court Refuses to Hear Appeal of Monsanto Seed Case*, Reuters (Jan. 13, 2014), http://www.reuters.com/article/2014/01/13/usa-court-monsanto-idUSL2N0KN1CA20140113.

28 *See Frequently Asked Questions*, Autism Speaks, http://www.autismspeaks.org/what-autism/faq (last visited Feb. 22, 2014).

29 Rio Declaration, UN Doc. A/CONF.151/26 (vol. I); 31 ILM 874 (1992).

30 *See Precaution in International Sustainable Development*, World Summit on Sustainable Dev. 4 (2002), http://cisdl.org/public/docs/news/brief_precaution2.pdf.

31 As argued in this feature, the United States' obligation arises under the following international human rights treaties: the International Covenant on Economic, Social and Cultural Rights and the Convention on the Rights of the Child.

32 International Covenant on Economic, Social and Cultural Rights, Dec. 16, 1966, S. Treaty Doc. No. 95-19, 6 I.L.M. 360 (1967), 993 U.N.T.S. 3.

33 Convention on the Rights of the Child, Nov. 20, 1989, 1577 U.N.T.S. 3.