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The Shortcomings of Regulating Pesticides Internationally and How Disadvantaged Communities Pay the Price

*Alex Sauerwein**

Abstract

Glyphosate is a toxic pesticide heavily used in food production. As a result, glyphosate ends up in the air we breathe and the water we drink. The increasing spread and use of glyphosate have many negative impacts on public and environmental health. Researchers are finding links between the use of glyphosate and cancer, Parkinson disease, and lower IQ rates in humans. Researchers have also linked glyphosate to environmental harms, like decreased biodiversity and unintended killing of fish near farms. International law has attempted to limit the use of toxic chemicals through hard law principles like the Rotterdam Convention and soft law techniques like organic labeling. Unfortunately, while some jurisdictions have banned these chemicals, they are still widely used. This paper focuses on the policies that have led to successful bans on toxic chemicals and how California and the international community can implement these techniques. Specifically, Mals, Italy has placed a complete ban on glyphosate, and many other European Union (“EU”) countries also face political pressure from activist groups to ban the pesticide. Advocates for the ban cite international law principles, such as the obligation not to cause environmental harm. In California, humans now have a right to clean water, which is threatened by the use of glyphosate. Based on the principles and guidelines set forth in this paper, I will advocate why glyphosate should be the next chemical banned.

I. Introduction

The use of pesticides to grow food is not an environmentally benign activity.¹ In the United States, it is estimated that one billion pounds of

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1. See, e.g., Md. Wasim Aktar et al., *Impact of Pesticide Use in Agriculture: Their Benefits and Hazards*, 2 INTERDISC. TOXICOLOGY 1, 5 (Mar. 2009) (discussing “[t]he results of a comprehensive set of studies done by the U.S. Geological Survey (USGS) on major

pesticides are applied annually.² The Centers for Disease Control and Prevention have found that many Americans carry some amount of pesticides in their body, and mothers increasingly pass chemicals on to their babies in the womb.³ Monsanto recently lost a case in the Superior Court of California in San Francisco.⁴ The Court held that Monsanto's glyphosate-based product, "RoundUp," was at fault for causing cancer in a man whose job it was to spray the chemical.⁵ Also, when sprayed on farms, this pesticide leads to more pollution because the pesticides end up in airways and waterways, which affects the quality of life for humans, fish, and other animals.⁶

The rise in pesticide use has also caused an environmental justice issue, where some of the poorest individuals are burdened with shouldering the environmental dangers that are inherent with the use of pesticides to grow food.⁷ In *The Rotterdam Convention on Hazardous Chemicals: A Meaningful Step Toward Environmental Protection*, Paula Barrios explains how one of the few pesticide trade conventions, the Rotterdam Convention, places an unfair burden on developing nations because it requires them, rather than developed countries or manufacturers, to "test, monitor, or regulate pesticides imported" despite their having strained resources.⁸

river basins across the country in the early to mid-90s yielded startling results. More than 90 percent of water and fish samples from all streams contained one, or more often, several pesticides.").

2. *Pesticides 101*, PESTICIDE ACTION NETWORK N. AM., <http://perma.cc/2W87-3RUA> (last visited Dec. 18, 2018).

3. *Pesticides in Our Bodies*, PESTICIDE ACTION NETWORK N. AM., <http://perma.cc/TRB6-2QMJ> (last visited Dec. 18, 2018); CTRS. FOR DISEASE CONTROL & PREVENTION, DEP'T OF HEALTH & HUM. SERVS., *FOURTH NATIONAL REPORT ON HUMAN EXPOSURE TO ENVIRONMENTAL CHEMICALS* 67-116, 156-75 (2009).

4. Bob Egelko & Peter Fimrite, *Monsanto Case: Bay Area Man with Cancer Awarded \$289 Million in Damages*, S.F. CHRON. (Aug. 10, 2018), <http://perma.cc/K7S3-XDMW>; see *Johnson v. Monsanto Co.*, No. CGC-16-550128, 2016 Cal. Super. LEXIS 4714, at *1-2 (S.F. Super. Ct. July 14, 2016).

5. *Monsanto Co.*, No. CGC-16-550128, 2016 at *1-2.

6. Robert Annett et al., *Impact of Glyphosate and Glyphosate-based Herbicides on the Freshwater Environment*, 34 J. OF APPLIED TOXICOLOGY 458, 463-75 (2014).

7. Human Rights Council, Rep. of the Special Rapporteur on the Right to Food on Its Thirty-Fourth Session, ¶¶ 1-31, U.N. Doc. A/HRC/34/48 (Jan. 24, 2017) [hereinafter Rep. of Special Rapporteur].

8. Paula Barrios, *The Rotterdam Convention on Hazardous Chemicals: A Meaningful Step Toward Environmental Protection*, 16 GEO. INT'L ENVTL. L. REV. 679, 738 (2004).

Glyphosate is in wide use.⁹ Since Monsanto's "Roundup Ready" crops were introduced, glyphosate use has increased almost fifteen-fold and an estimated 8.6 kilograms have been applied globally since 1974.¹⁰ These high application rates could be because many countries have yet to ban the chemical completely.¹¹ El Salvador is the only country in the world with a country wide ban.¹² Many local jurisdictions that have restrict the use of the chemical, and several cities have also banned the chemical.¹³ California, one of the largest agriculture hubs in the world, currently has no meaningful restriction on the chemical; in fact, California actively sprays glyphosate in its waterways to control waterborne weeds in state owned water channels.¹⁴

California should join the cities of the EU and other jurisdictions and ban glyphosate. A ban of the chemical is important for several reasons. First, glyphosate is applied outdoors on a large scale and may impact the living organisms exposed to it.¹⁵ Widescale outdoor use also makes it impossible to contain the chemical to an area that would not harm the public or the environment, this is called glyphosate drift.¹⁶ Second, one of the largest glyphosate manufacturers, Monsanto, was found guilty of concealing the negative effects of the chemical.¹⁷ Jurisdictions should not reward companies with unrestricted distribution of products that the corporation knows are harmful to the public and the environment. Finally, the individuals most burdened with the negative impacts of glyphosate are poor communities, who are already disproportionately impacted by other environmental harms.¹⁸ Additionally, around 200,000 acute poisoning

9. Charles M. Benbrook, *Trends in Glyphosate Herbicide Use in the United States and Globally*, 28 ENVTL. SCI. EUR. 1, 1–13 & supp. tbls. 1–24 (2006); see *id.* at 1, supp. tbl. 1 ("In 2014, farmers sprayed enough glyphosate to apply ~1.0 kg/ha (0.8 pound/acre) on every hectare of U.S.-cultivated cropland and nearly 0.53 kg/ha (0.47 pounds/acre) on all cropland worldwide.") (quoting Abstract).

10. Benbrook, *supra* note 9 at 5.

11. *Where is Glyphosate Banned?*, BAUM HEDLUND ARISTEI AND GOLDMAN PC (Nov. 2018), <http://perma.cc/UF8Z-PAVG> (only one country listed has a full country-wide ban).

12. *Id.*

13. *Id.*

14. Ryan Sabalow, *California Says This Chemical Causes Cancer. So Why Is It Being Sprayed into Drinking Water?*, SACRAMENTO BEE (July 30, 2018, 9:26 PM), <http://perma.cc/4T2C-JZPW>.

15. Krishna N. Reddy et al., *Biological Responses to Glyphosate Drift from Aerial Application in Non-Glyphosate-Resistant Corn*, 66 PEST MGMT. SCI. 1148, 1151–53 (2010).

16. *Id.*

17. International Monsanto Tribunal, Advisory Opinion, at 30, 33, 36–39 (Hague Trib. Apr. 2017), <https://perma.cc/W8W2-NJGB>.

18. Rep. of Special Rapporteur, *supra* note 7, ¶¶ 1, 9, 14–31.

deaths occur each year from pesticides, 99% of which occur in developing countries.¹⁹

This paper will first introduce background information about glyphosate and what health and environmental problems surround its use. The paper will then discuss the role and source of pesticide regulations in international law, specifically the Rotterdam Convention and international soft law principles. Then, the paper will review different jurisdictions around the world that have banned glyphosate, and the underlying rationales. Lastly, the paper will propose a complete ban of glyphosate in California, using the previously mentioned examples from other jurisdictions and existing California law, such as the human right to water.

II. The Problem with Glyphosate

Many experts have expressed concern about the lack of research and basic information on the potential adverse effects of chemicals in use today.²⁰ The scale at which glyphosate is used and the rate at which it enters our bodies and the environment, has created a pressing issue that needs resolution.²¹ Scientific reports show that glyphosate is detrimental to human health and the environment.²² This information must be taken into account in deciding whether to ban the use of glyphosate.

A. Glyphosate is the Most Applied Pesticide

Expert reports show that glyphosate is the most used herbicide and pesticide worldwide.²³ Since 1974, farmers have applied over 8.6 billion kilograms of glyphosate.²⁴ In the United States, two-thirds, or 67%, of the glyphosate used was applied to farms in the last ten years.²⁵ The trend is the same in California, where farmers applied over ten million pounds of

19. Rep. of Special Rapporteur, *supra* note 7, ¶ 1.

20. Wendy Wagner, *Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 83 IND. L.J. 629, 636 n.40 (2008) (listing expert studies that express concern over the lack of information about adverse effects of chemicals).

21. See Benbrook, *supra* note 9, at 11–13.

22. Int'l Agency for Research on Cancer [IARC], World Health Org. [WHO], *Some Organophosphate Insecticides and Herbicides*, in 112 IARC MONOGRAPHS ON THE EVALUATION OF CARCINOGENIC RISKS TO HUMS. i-464 (WHO Press rev. ed. 2017) (2015) [hereinafter IARC MONOGRAPH 112].

23. Lorraine Chow, *Monsanto's Glyphosate Most Heavily Used Weed Killer in History*, ECOWATCH (Feb. 2, 2016, 11:03 AM), <http://perma.cc/UV7X-E3AB>; see also Benbrook, *supra* note 8, at 6–7, 9–13.

24. Benbrook, *supra* note 9, at 1, supp. tbl. 24.

25. *Id.* at 5, 6 tbl. 2.

glyphosate in 2016.²⁶ This places glyphosate amongst the top ten most used pesticides in California.²⁷ In response to concerns about pesticide use, multinational companies, like Monsanto/Bayer, have marketed genetically engineered crops as a tool to reduce or even end pesticide use.²⁸ However, glyphosate use has increased fifteen-fold directly in response to the introduction of genetically engineered crops.²⁹ Monsanto's "Round-Up Ready Crops," and other genetically modified organisms account for 56% of the global glyphosate use, making genetically engineered products a large contributor to the increase.³⁰

Since it is one of the most heavily used agricultural chemicals, glyphosate has been found in several common food items.³¹ In 2018, the Environmental Working Group ("EWG") tested twenty-eight food items for glyphosate and all were found positive for glyphosate.³² The food items consisted of various conventional (non-organic) cereals purchased at grocery stores in the San Francisco Bay Area and Washington, D.C.³³ This illustrates how glyphosate can enter our food chain in places where consumers least expect it. Glyphosate is a chemical used primarily on farms, and not in the process of creating dried breakfast cereals. This begs the question of whether glyphosate has health impacts on humans beyond direct exposure; Because of glyphosate's ability to linger in the food production chain, one can speculate that glyphosate may also linger elsewhere in the environment.

B. Glyphosate Harms Human Health and the Environment

In 2015, the International Agency for Research on Cancer ("IARC"), the research arm of the World Health Organization, published a report that caused ripple effects around the world.³⁴ The IARC convened a group of

26. CAL. DEP'T OF PESTICIDE REG., THE TOP 100 PESTICIDES USED BY POUNDS OF ACTIVE INGREDIENTS STATEWIDE IN 2016 (2016), <https://perma.cc/2MUF-9ELZ>.

27. *Id.*

28. *Myths & Facts*, PESTICIDE ACTION NETWORK N. AM., <http://perma.cc/63VL-9SQS> (last visited Feb. 16, 2019).

29. Benbrook, *supra* note 9, at 10–11, supp. tbls. 18 & 24.

30. *Id.* at 7; *see also* Karl Russell & Danny Hakim, *Broken Promises of Genetically Modified Crops*, N.Y. TIMES (Oct. 29, 2016), <http://perma.cc/UV8X-HAQR>; *Myths & Facts*, *supra* note 28.

31. Alex Formuzis, *Roundup for Breakfast, Part 2: In New Tests, Weed Killer Found in All Kids' Cereals Sampled*, ENVTL. WORKING GROUP (Oct. 24, 2018), <http://perma.cc/BV66-9SQV>.

32. *Id.*

33. *Id.*

34. *See* IARC MONOGRAPH 112, *supra* note 22.

seventeen experts from eleven countries to assess the cancer risks associated with several chemicals, including glyphosate.³⁵ The experts examined available science on the topic and found that glyphosate must be classified as “probably carcinogenic.”³⁶ The group pointed to evidence from the United States Environmental Protection Agency that showed that glyphosate caused cancer in research animals.³⁷ In addition, they found evidence that glyphosate could cause non-Hodgkin’s lymphoma in humans.³⁸ Additional sources have found that glyphosate can also cause negative health ailments such as skin infections from acute exposure, or even infertility from long-term exposure.³⁹

California responded to the IARC report by listing glyphosate as a known carcinogen.⁴⁰ To list glyphosate, California referenced the California Health and Safety Code which states:

No person in the course of doing business shall knowingly discharge or release a chemical known to the state to cause cancer or reproductive toxicity into water or onto or into land where such chemical passes or probably will pass into any source of drinking water.⁴¹

No person in the course of doing business shall knowingly and intentionally expose any individual to a chemical known to the state to cause cancer or reproductive toxicity without first giving clear and reasonable warning to such individual.⁴²

Monsanto unsuccessfully challenged the California listing in court, but the listing still stands.⁴³ California regulations require the listing of a chemical if it is classified by the IARC as a known chemical that causes cancer.⁴⁴

35. See IARC MONOGRAPH 112, *supra* note 22, at 3–7.

36. *Id.* at 321–98.

37. *Id.* at 350–61.

38. See IARC MONOGRAPH 112, *supra* note 22, at 336–48.

39. Meriel Watts et al., Pesticide Action Network Int’l, *Glyphosate*, at 1, 2–3 (Oct. 2016).

40. CAL. OFF. OF ENVTL. HEALTH HAZARD ASSESSMENT, GLYPHOSATE LISTED EFFECTIVE JULY 7, 2017, AS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER (June 26, 2017), <http://perma.cc/V66G-MRQZ>.

41. CAL. HEALTH & SAFETY CODE § 25249.5 (2019).

42. *Id.*

43. *Glyphosate Listed Effective July 7, 2017*, *supra* note 40.

44. CAL. CODE REGS. tit. 27, § 25904 (2019).

Glyphosate also impacts environmental health, because when sprayed in gardens or agriculture fields it can linger in the soil for three years.⁴⁵ Glyphosate is also dangerous because it can appear inactive and “bind” with soil particles, but then later free itself from these particles and become a free agent in the environment.⁴⁶ Once glyphosate is released in the environment, it can mix with water and alter the composition of aquatic environments.⁴⁷ Once glyphosate spreads to streams or bodies of water it can also affect the amount of algae in the water.⁴⁸ Studies show a 40% increase in algae and a 70% decrease in tadpole species because the algae decreases oxygen in the water.⁴⁹ In addition, certain plant species, otherwise known as “weeds,” have developed a resistance to glyphosate.⁵⁰ This resistance has led farmers to resort to methods they had previously abandoned, because glyphosate promised to solve their weed problems.⁵¹ Resistance requires farmers to spray increasing amounts of glyphosate because the chemicals have become more ineffective.⁵² This positive feedback loop causes further environmental concerns.⁵³

Monsanto has responded to recent criticism and the IARC report by pointing to glyphosate’s long history of use.⁵⁴ Monsanto argues that glyphosate has been used for over forty years and that over 800 studies have shown glyphosate is safe for use.⁵⁵ Monsanto also attempted to cast doubt on the credibility of IARC as an institution.⁵⁶ For example, Monsanto stated that IARC also found that beer, cell phones, meat, and coffee cause cancer.⁵⁷ This assertion portrays IARC as an agency that finds any commonly used item causes cancer. This argument is unconvincing

45. Watts et al., *supra* note 39, at 6.

46. *Id.*

47. *Id.*

48. Watts et al., *supra* note 39, at 6.

49. Rick A. Relyea, *The Impact of Insecticides and Herbicides on the Biodiversity and Productivity of Aquatic Communities*, 15 *ECOLOGICAL APPLICATIONS* 618, 618 (2005).

50. Watts et al., *supra* note 39, at 6.

51. William Neuman & Andrew Pollack, *Farmers Cope with Roundup-Resistant Weeds*, N.Y. TIMES (May 3, 2010), <http://perma.cc/LE3D-8HRP>.

52. *Id.*

53. Benbrook, *supra* note 9, at 2.

54. *IARC’s Report on Glyphosate*, MONSANTO (Apr. 21, 2017), <http://perma.cc/G375-J96K>.

55. *Id.*

56. *Id.*

57. *Id.*

because IARC bases its findings on a wide range of published and peer reviewed scientific studies.⁵⁸

C. Recap

Farmers still use record amounts of glyphosate, despite its harm to human health, environmental impacts, and the lack of efficacy against weed species that have developed a resistance. As a result, individuals may still be exposed to the negative effects of this toxic chemical. International and local law must step in to reduce the dangers to the public from the use of glyphosate.

III. The Role and Source of Pesticide Regulations in International Law

A complete ban of the chemical is the best way to protect people and the environment from the dangers of glyphosate, discussed in Section II, because a ban is the only way to end use completely. The Rotterdam Convention is one of the only international treaties that attempts to regulate pesticides. However, the Rotterdam Convention fails to protect poor communities in which it is sprayed because it shifts the burden from corporations and developed countries to poor countries, who lack the proper resources to track or restrict pesticide use.⁵⁹ Although, international soft law principles provide guidance on how a responsible party should act, without an enforceable ban, soft law principles fail to fully protect vulnerable communities because by definition they lack enforcement power.⁶⁰

58. Director of IARC, *IARC Response to Criticisms of the Monographs and the Glyphosate Evaluation*, WORLD HEALTH ORG. [WHO] 1, 5 (Jan. 2018) (“The Monographs do not exclude research conducted by industry *per se*. Where industry-conducted studies are published in scientific journals they are considered, if available in sufficient detail to allow independent scientific review. Under the same conditions, the Monographs also take account of industry-conducted research in summary form or if placed in the public domain by national regulatory agencies.”).

59. Barrios, *supra* note 8, at 727.

60. Andrew T. Guzman & Timothy L. Meyer, *International Soft Law*, 2 J. LEGAL ANALYSIS 171, 171 (2010) (“[W]e define soft law as those nonbinding rules or instruments that interpret or inform our understanding of binding legal rules or represent promises that in turn create expectations about future conduct.”).

A. Rotterdam Convention

The Rotterdam Convention was signed on September 10, 1998, by seventy-two signatories and became effective on February 24, 2004.⁶¹ The Convention, acting in response to concerns that developing countries lacked the adequate infrastructure to monitor risks from chemicals, sought to protect the countries with mandatory controls.⁶² The Convention aims to protect public health, specifically consumer and workers, as well as the environment from the negative impacts of hazardous chemicals and pesticides in international trade.⁶³ The Convention's main objective is to promote shared responsibility among parties and to protect the human health and the environment by facilitating information exchange.⁶⁴ The Convention states in relevant part:

The objective of this Convention is to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.⁶⁵

Article 14 of the Convention provides guidelines on how to exchange information. According to the Convention, each party shall (as appropriate) exchange scientific, technical, economic and legal information.⁶⁶ This requirement is mandatory for all parties and is meant to empower importing nations.⁶⁷ The information provided by the exporting nations aims to give

61. U.N. ENV'T PROGRAMME & FOOD AND AGRIC. ORG., HISTORY OF THE NEGOTIATIONS OF THE ROTTERDAM CONVENTION, <https://perma.cc/N56X-3FFD> (last visited Feb. 17, 2019).

62. Introduction to Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Sept. 10, 1998, 2244 U.N.T.S. 337.

63. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, pmbl., Sept. 10, 1998, 2244 U.N.T.S. 337 [hereinafter Rotterdam Convention].

64. Rotterdam Convention, *supra* note 61, art. 1.

65. *Id.*

66. *Id.* art. 14.

67. U.N. ENV'T PROGRAMME & FOOD AND AGRIC. ORG., HOW IT WORKS, <http://perma.cc/G8XJ-3MMJ> (last visited Feb. 17, 2019).

notice to the importing nation about the risks involved with the pesticide.⁶⁸ This is known as “Prior Informed Consent” (PIC).

PIC does not stop a nation from importing a chemical, rather it aims to level the playing field so that exporting nations with a ban or restriction on chemicals, cannot pass on the environmental and public health responsibility by exporting the chemical to a less equipped nation.⁶⁹ Specifically, article eleven, section two of the Convention states that each party shall ensure that no banned chemical will be imported into a country that has failed to respond to the exporting country.⁷⁰ Legal commenter, Paula Barrios, noted that article eleven seems to establish a rule that no export will occur unless the countries agree to the export.⁷¹ However, in practice the Convention does not stop the export of chemicals, but actually allows the export of chemicals unless an importing country explicitly refuses the import by PIC procedure.⁷²

A major issue with the Rotterdam Convention is that it is not meant to stop the trade or use of chemicals. It is unlikely that the Rotterdam Convention provides meaningful safeguards against dangerous chemicals. Advanced countries may ban a chemical, yet export the chemical to a country that has less resources to research the chemical’s safety. This is called the ‘circle of poison,’ which was introduced as a concept in 1981 by two investigative journalists.⁷³ This concept showed how pesticides that were produced but restricted in northern countries, were then exported to developing countries with less restriction.⁷⁴

Legal commentator, Paula Barrios, also postulated that PIC is inconsistent with the Rio Declaration’s principle of state responsibility for transboundary harm.⁷⁵ According to Barrios, if a state has already banned a chemical and then exports the chemical, the state is not acting in accordance with its duty to take appropriate measures to prevent significant

68. U.N. ENV’T PROGRAMME & FOOD AND AGRIC. ORG., HOW IT WORKS, <http://perma.cc/G8XJ-3MMJ> (last visited Feb. 17, 2019).

69. Rotterdam Convention, *supra* note 61, art. 11; HOW IT WORKS, *supra* note 67.

70. *Id.* ¶ 2 (“Each Party shall ensure that a chemical listed in in Annex III is not exported from its territory to any importing Party that, in exceptional circumstances, has failed to transmit a response or has transmitted an interim response that does not contain an interim decision . . .”).

71. Barrios, *supra* note 8, at 727.

72. Barrios, *supra* note 8, at 727.

73. DAVID WEIR & MARK SCHAPIRO, CIRCLE OF POISON: PESTICIDES AND PEOPLE IN A HUNGRY WORLD (1st ed. 1981).

74. *Id.*

75. Barrios, *supra* note 8, at 728.

transboundary harm.⁷⁶ Principle 2 of the Rio Declaration on Environment and Development is a widely accepted principle of customary international law, and guides states to ensure their lawful activities will not damage the environment of other states.⁷⁷

B. International Soft Law Regulations of Pesticides

The International Monsanto Tribunal, an advisory opinion that explored the agrochemical giant's conduct on the international stage, reviewed Monsanto's responsibility under international law and some of its shortcomings.⁷⁸ The Tribunal was a panel of five practicing judges who volunteered their time to write an opinion based on their expert knowledge of international law.⁷⁹ The panel included a group of legal experts who were concerned that Monsanto sidestepped liability from the use of their products.⁸⁰ The opinion issued by the Tribunal was mostly symbolic and carries no legal authority.⁸¹ However, the opinion and the research behind it, could be used in lawsuits to establish international law.⁸² The Tribunal found that Monsanto settled the majority of their cases out of court, giving them the ability to circumvent negative legal precedents.⁸³ The Tribunal also pointed to Monsanto's large budget as a means to fend off legal challenges.⁸⁴

The first question addressed by the tribunal was whether Monsanto violated international human rights laws, by not acting in accordance to the

76. Barrios, *supra* note 8, at 728.

77. Barrios, *supra* note 8, at 728, U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, Principle 2, U.N. Doc. A/CONF.151/26/Rev.1(Vol. I) (June 3–14, 1992) [hereinafter *Rio Declaration*] (“States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”).

78. International Monsanto Tribunal, *supra* note 17.

79. Stichting/Foundation Monsanto Tribunal, *Monsanto Tribunal*, INT’L MONSANTO TRIBUNAL, <https://perma.cc/TC6F-K6XJ> (last visited Feb. 5, 2019).

80. *Id.*

81. *Id.*

82. *Id.* (“The aim of the Tribunal is to give a legal opinion on the environmental and health damage caused by the multinational Monsanto. This will add to the international debate to include the crime of Ecocide into international criminal law. It will also give people all over the world a well-documented legal file to be used in lawsuits against Monsanto and similar chemical companies.”).

83. *Id.*

84. Stichting/Foundation Monsanto Tribunal, *supra* note 79.

right to a safe, clean, healthy, and sustainable environment.⁸⁵ In answering this question, the Tribunal recognized two dimensions to the duty to a healthy environment. The two dimensions are outlined in the right to a safe, clean, healthy, and sustainable environment as a “procedural dimension,” and a “substantial dimension.”⁸⁶ The “procedural dimension” allows parties to live in a healthy environment by being able to engage in debate and discussion because the parties have a common set of facts to work with once the procedural dimension is satisfied.⁸⁷ This is essentially the PIC requirement discussed above. The second dimension is the “substantial dimension,” which means that parties have a “substantive obligation” to sustain the environment in a way that protects a healthy living environment.⁸⁸ The advisory opinion found that Monsanto’s conduct had a negative impact on the right to a healthy environment, because it violated both the procedural and the substantial dimensions.⁸⁹ Monsanto was in violation of the procedural dimension because it continued to market and produce glyphosate herbicides despite the IARC’s finding that glyphosate was carcinogenic.⁹⁰ Monsanto violated the substantial dimension because its products left residue in the air, soil, and water, which negatively impacted biodiversity and water quality.⁹¹ The advisory opinion also noted that by violating the substantial dimension, Monsanto negatively impacted the rights of indigenous peoples and local communities.⁹² The advisory opinion also predicted that Monsanto will continue to settle out of court, using its large budget to its advantage.⁹³ From this opinion, it is clear that a complete ban on glyphosate is the most effective way to ensure that communities are protected.

85. International Monsanto Tribunal, *supra* note 17, at 17 (“Did the firm Monsanto, by its activities, act in conformity with the right to a safe, clean, healthy and sustainable environment, as recognized in international human rights law (Resolution 25/21 of the Human Rights Council, of 15 April 2014), taking into account the responsibilities imposed on corporations by the Guiding Principles on Business and Human Rights, as endorsed by the Human Rights Council in Resolution 17/4 of 16 June 2011?”).

86. *Id.* at 18.

87. *Id.*

88. *Id.* at 18–19.

89. International Monsanto Tribunal, *supra* note 17, at 19.

90. *Id.*

91. *Id.* at 20.

92. *Id.*

93. Stichting/Foundation Monsanto Tribunal, *supra* note 79 (“Each year, Monsanto spends enormous amounts on legal defense to fend off the cases brought by the victims of its activities. This does not encourage the company to change its practices. So long as it remains more profitable for shareholders to take risks in the community—even if that means compensating the victims occasionally—these practices will persist.”).

C. Corporate Social Responsibility

Monsanto has a voluntary corporate social responsibility to protect and inform consumers.⁹⁴ For example, Monsanto has implemented preventive auditing and self-reporting to achieve protection for employees by encouraging employees and field operators to identify and report concerns.⁹⁵ However, Monsanto may never be held accountable for failing to provide necessary protections for consumers, particularly in developing nations, because there is no way to bind non-state actors on the international stage.⁹⁶ The advisory opinion, discussed *supra* Section III.B, explained how past arguments illustrate how “corporations cannot be considered ‘subjects’ of international law, and therefore direct legal responsibility cannot be attributed to them.”⁹⁷ However, the advisory opinion also discusses a possible shift in thinking, since the United Nations Secretary General’s Special Representative on Human Rights and Transnational Corporations and Other Business Enterprises, stated that these arguments are rooted in the past and corporations may now be recognized as participants in international treaties.⁹⁸ The advisory opinion addressed this shift in thinking:

While according companies like Monsanto unprecedented rights and entitlements, international law has failed woefully to impose any corresponding obligation to protect human rights and the environment . . . The Tribunal strongly encourages authoritative bodies to address the legal and practical limitations that currently confine the scope, content and ultimately the effectiveness of international human rights law.⁹⁹

This illustrates how Monsanto may eventually be persuaded by international pressure to voluntarily regulate itself. Unfortunately, these changes will not fully mitigate the harm caused by glyphosate, and it will remain in use until it is completely banned. The most effective way for States to curb the dangerous effects of glyphosate is with a complete ban of the chemical.

94. International Monsanto Tribunal, *supra* note 17, at 52.

95. *Growing Better Together: 2017 Sustainability Report*, MONSANTO 52 (2017), <https://perma.cc/U2HL-YCVX>.

96. International Monsanto Tribunal, *supra* note 17, at 52.

97. *Id.*

98. International Monsanto Tribunal, *supra* note 17, at 52.

99. *Id.* at 53.

D. Section Summary

The discussion above provides an overview of current international environmental law on the restriction of glyphosate. The current international structure recognizes the chemical is unsafe, but fails to adequately protect individuals from the harms caused by it. The next section will analyze jurisdictions that have banned glyphosate and what California can learn from these jurisdictions.

IV. Bans Abroad and an Application of its Rationale to California

A. How California Laws can Learn from International Environmental Law

California can borrow principles from international environmental law that have created regulatory controls and successfully strengthened protections for people and the planet. Here the precautionary principle and the principle of corporate social responsibility are the most applicable principles.

i. Precautionary Principle

The precautionary principle is outlined in the Rio Declaration on Environment and Development and states that where there are threats of serious or irreversible damage, a lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.¹⁰⁰

Here, the question is whether a lack of full scientific certainty exists and if that lack of certainty has led to postponing of cost-effective measures to prevent environmental harm. As discussed previously, glyphosate was originally listed as a possible carcinogen to humans by the U.S. EPA in 1985.¹⁰¹ The EPA eventually backtracked this listing in 1991.¹⁰² Almost twenty years later, the IARC listed glyphosate as “probably carcinogenic” to humans in response to the uncertainty created by the U.S. EPA.¹⁰³ After changing their position, the EPA and agricultural chemical industry attempted to reassure and persuade the public that glyphosate should not be regulated. The argument that there is a “lack of full scientific certainty” should not be used by states or agricultural chemical companies to postpone

100. *Rio Declaration*, Principle 15, *supra* note 77.

101. IARC, *IARC Monographs Volume 112: Evaluation of Five Organophosphate Insecticides and Herbicides*, WHO (Mar. 20, 2015), <https://perma.cc/SE4X-DY6Z>.

102. *Id.*

103. *Id.*

the implementation of effective measures to prevent harms caused by the chemical. Governments must act now to protect human and environmental health by banning the use of the pesticide.

B. Regulations Abroad

California can learn from other countries and what they have done to protect the public from the harms of chemicals. In Mals, Italy, there is a complete ban on all pesticides.¹⁰⁴ Additionally, in the European Union there is a growing pressure to completely ban glyphosate.¹⁰⁵

i. Glyphosate Ban in Mals, Italy

A town in Italy deserves special attention for their recent action, which can be best categorized as a bottom-up approach to pressure the EU to ban glyphosate. In 2014, residents of Mals, Italy, a small town of 5,200 residents, voted to ban all pesticides not only on public land but also on private land in the town.¹⁰⁶ The town moved to ban all pesticides after women in the community mobilized to protect future generations.¹⁰⁷ The women called their group “Hollawint,” an exclamation of warning in the local dialect.¹⁰⁸ The Hollawint group organized in response to the growing apple industry, which took control of many farms and converted operations to only grow apples with pesticide sprinklers.¹⁰⁹ The Hollawint mobilized and used the precautionary principle to convince their neighbors and fellow farm owners to ban all pesticide use in the town.¹¹⁰ This bottom up approach was helpful in laying the groundwork for larger change in the EU and served as a model for other towns to ban glyphosate. Mals, Italy, serves as motivation and inspiration to create change on a larger scale for all the EU, which has seen growing opposition to pesticide use and demand for regulation, particularly with glyphosate.

104. Philip Ackerman-Leist, *Turning a Town Pesticide Free*, MOTHER EARTH NEWS (April 2018), <https://perma.cc/8R8G-QTS6>.

105. Philip Blenkinsop, *Germany Swings EU Vote in Favor of Weed-Killer Glyphosate*, REUTERS (Nov. 27, 2017, 2:50PM), <https://perma.cc/7QCZ-HAMM>; Danny Hakim, *Glyphosate, Top-Selling Weed Killer Wins E.U. Approval for 5 Years*, N.Y. TIMES (Nov. 27, 2017), <https://perma.cc/9ZVT-3BZ5>.

106. Ackerman-Leist, *supra* note 104.

107. *Id.*

108. *Id.*

109. *Id.*

110. *Id.*

ii. European Union Regulation Through License

The EU recently approved a five-year extension for glyphosate's license in opposition to public backlash to glyphosate.¹¹¹ Angela Merkel was the sway vote, voting in favor of renewing glyphosate for the five-year period in response to demands from a coalition group, with which she was in the process of forming a relationship with at the time.¹¹² This led French President, Emmanuel Macron, to publicly support a ban in France as soon as alternatives are available but within three years.¹¹³ The review process was labeled by environmentalists, the public, and agricultural chemical companies as driven more by politics than science.¹¹⁴

According to the European Union Commission's website, obtaining approval to use a pesticide involves a seven-step process.¹¹⁵ The process requires a draft assessment, which may reveal issues with the pesticide, but then reviewing organizations can still adopt the pesticide even if it is unsafe.¹¹⁶ However, EU regulations governing this process explicitly call for the application of the precautionary principle when approving pesticides, and allow member states to ban pesticides under the precautionary principle approach.¹¹⁷ The relevant portion of the EU regulation states:

The provisions of this Regulation are underpinned by the precautionary principle in order to ensure that active substances or products placed on the market do not adversely affect human or animal health or the environment. In particular, Member States shall not be prevented from applying the precautionary principle where there is scientific uncertainty

111. Blenkinsop, *supra* note 105; Hakim, *supra* note 105.

112. Blenkinsop, *supra* note 105; Hakim, *supra* note 105.

113. Sybille de la Hamaide, Ingrid Melander & Jean-Baptiste Vey, *Macron Says Glyphosate to Be Banned in France Within Three Years*, REUTERS (Nov. 27, 2017, 9:25 AM), <https://perma.cc/5SPB-CQCZ>.

114. Hakim, *supra* note 105.

115. EUR. COMM'N, APPROVAL OF ACTIVE SUBSTANCES, <https://perma.cc/VBK5-FC37> (last visited Dec. 17, 2018) (The steps include: "(1) Application to an EU country called Rapporteur Member State (RMS); (2) RMS verifies if the application is admissible; (3) RMS prepares a draft assessment report; (4) EFSA issues its conclusions; (5) Standing Committee for Food Chain and Animal Health votes on approval or non-approval; (6) Adoption by the Commission; (7) Publication of a regulation in the EU Official Journal.").

116. *Id.*

117. Regulation (EC) No. 1107/2009, of the European Parliament and of the Council of 21 October 2009 Concerning the Placing of Plant Protection Products on the Market and Repealing Council Directives 79/117/EEC and 91/414/EEC, 2009 O.J. (L 309) 2, 6, 13.

as to the risks with regard to human or animal health or the environment posed by the plant protection products to be authorized in their territory.¹¹⁸

The same regulation states: “[t]he precautionary principle should be applied and this Regulation should ensure that industry demonstrates that substances or products produced or placed on the market do not have any harmful effect on human or animal health or any unacceptable effects on the environment.”¹¹⁹ This provision should have led voting members to *not* approve glyphosate due to the uncertainty around its safety. However, the regulation preserves the member states’ right to ban importation of a pesticide under a precautionary principle approach.¹²⁰ This delegation of authority is similar to the approach used in California and the United States.

C. California’s Regulatory Structure

In the United States, pesticide registration is similar to the process in the EU. The EU Commission that approves pesticide use is most analogous to the United States’ EPA, which initially approves a pesticide and allows states to implement stricter controls or regulations if they wish to do so.¹²¹

i. Supreme Court Gives Local Ability to Regulate Pesticides

In the United States, states can set stricter standards than the federal government, if they wish to do so.¹²² Therefore, a state can choose not to register a pesticide if the pesticide does not meet the state’s own health or safety standards.¹²³ In 1991, the United States Supreme Court held that federal law did not preempt state laws and regulations that conflict with federal pesticide regulations.¹²⁴ The Supreme Court held that “the allocation of regulatory authority [is left] to the absolute discretion of the states themselves, including the options of . . . leaving local regulation of

118. Regulation (EC) No. 1107/2009, of the European Parliament and of the Council of 21 October 2009 Concerning the Placing of Plant Protection Products on the Market and Repealing Council Directives 79/117/EEC and 91/414/EEC, 2009 O.J. (L 309) at 6.

119. *Id.*

120. *Id.* at 2.

121. CAL. DEP’T OF PESTICIDE REG., A GUIDE TO PESTICIDE REGULATION IN CALIFORNIA: 2017 UPDATE (2017), at 9 [hereinafter GUIDE].

122. *Id.*

123. *Id.*

124. *Wisconsin Pub. Intervenor v. Mortier*, 501 U.S. 597, 605 (1991).

pesticides in the hands of local authorities under existing state laws.”¹²⁵ Therefore, California and other states are free to restrict the use of pesticides.

ii. California Has Authority to Ban

California delegates all regulatory matters related to pesticides to the California Department of Pesticide Regulation (“DPR”).¹²⁶ The California Food and Agriculture Code authorizes the state’s regulatory program and mandates DPR to “protect the environment from environmentally harmful pesticides by prohibiting, regulating or ensuring proper stewardship of those pesticides.”¹²⁷ According to DPR’s handbook, DPR requires all pesticide registrants to submit an “adverse effects disclosure,” which outlines all known adverse effects resulting from the use of the pesticide.¹²⁸ DPR uses the information contained in the adverse effects disclosure to determine whether or not to register the pesticide in California.¹²⁹ DPR will suspend or cancel a pesticide’s registration if the report contains information that leads DPR to conclude that use of the pesticide will lead to an “unacceptable risk” with no solution.¹³⁰ This is particularly important because when a pesticide comes up for reevaluation it may be suspended or canceled.¹³¹ Section 6221, tit. 3, of the California Code of Regulations lists twelve factors, any one of which may prompt reevaluation of a pesticide.¹³² The relevant factors here are public or worker health hazard, fish or wildlife hazard, lack of efficacy, and the availability of an effective and feasible alternate material that is demonstrably less destructive to the environment.¹³³

125. *Wisconsin Pub. Intervenor*, 501 U.S. 597 at 598.

126. GUIDE, *supra* note 121, at 7.

127. *Id.* at 1.

128. *Id.* at 29.

129. *Id.*

130. GUIDE, *supra* note 121, at 7.

131. *Id.* at 29.

132. CAL. CODE REGS. tit. 3, § 6221 (2019) (“The director shall also reevaluate a pesticide when certain factors have been found such as, but not limited to: (a) public or worker health hazard, (b) environmental contamination, (c) pesticide residue over tolerance, (d) fish or wildlife hazard, (e) lack of efficacy, (f) undesirable phytotoxicity, (g) hazardous packaging, (h) inadequate labeling, (i) disruption of the implementation or conduct of pest management, (j) other information suggesting a significant adverse risk, (k) availability of an effective and feasible alternate material or procedure which is demonstrably less destructive to the environment, (l) discovery that data upon which a registration was issued is false, misleading, or incomplete”).

133. § 6221(a), (d), (e), (k).

Glyphosate poses a risk as a public or worker health hazard.¹³⁴ As discussed *supra* Section II.B, glyphosate is now being linked to cancer. For example, the 2015 IARC study changed the status of glyphosate to “probably carcinogenic.”¹³⁵ The study also suggested that glyphosate could lead to non-Hodgkin’s lymphoma.¹³⁶ After the study was released, the California Superior Court ruled in favor of a pesticide handler, who claimed the glyphosate he sprayed while landscaping caused him to become ill with non-Hodgkin’s lymphoma.¹³⁷ California has also officially listed glyphosate as a carcinogen.¹³⁸ These events contribute to the increasing evidence that glyphosate poses a hazard to public and worker health.

Studies also show that glyphosate poses a hazard to fish and wildlife.¹³⁹ The Pesticide Action Network’s glyphosate monograph has consolidated many publications that consistently show that glyphosate based pesticides cause oxidative stress in fish.¹⁴⁰ Glyphosate based pesticides also have led to increased algae in aquatic environments which causes hazardous environments for fish and wildlife.¹⁴¹ The impact on fish and wildlife can extend after the pesticide is sprayed because it remains in the soil and can stay active for up to three years.¹⁴² These scientific studies show that glyphosate is a hazard to fish and wildlife and requires attention under DPR’s regulations to reevaluate.

As weeds become resilient glyphosate is losing its efficacy on farms.¹⁴³ Farmers are applying glyphosate in increasing amounts because the pesticide is losing its efficacy against certain weed species.¹⁴⁴ Agriculture chemical companies have responded by creating genetically modified organisms that are resistant to glyphosate based pesticides, so that farmers will spray even more on their fields.¹⁴⁵ Farmers now report that glyphosate is less effective on their farms.¹⁴⁶ This shows how glyphosate

134. § 6221(a).

135. IARC, *supra* note 101.

136. *Id.*

137. Egelko & Fimrite, *supra* note 4.

138. *Glyphosate Listed Effective July 7, 2017*, *supra* note 40.

139. CAL. CODE REGS. tit. 3, § 6221(d) (2019).

140. Watts et al., *supra* note 39, at 25 (References at least 10 studies that show that glyphosate-based pesticides have this negative impact on fish species.).

141. Watts et al., *supra* note 39, at 49.

142. *Id.* at 6.

143. CAL. CODE REGS. tit. 3, § 6221(e) (2019).

144. Benbrook, *supra* note 9, at 7.

145. Benbrook, *supra* note 9, at 8.

146. Russell & Hakim, *supra* note 30.

lacks efficacy as a weed killer and should be reevaluated under DPR's regulations.

In conjunction with the lack of efficacy as a weed killer, there are many effective and feasible alternates that are demonstrably less destructive to the environment.¹⁴⁷ In private use, glyphosate can be replaced with hand-weeding because homeowners often use glyphosate based pesticides for weed control in their gardens.¹⁴⁸ On a larger scale farm, hand-weeding is less feasible, but farmers can replace glyphosate based pesticides with large scale weed management tactics like polycropping, which reduces weed species, or timing cultivation and sowing so that the weeds will not have the time to grow.¹⁴⁹ Organic farming methods can be an effective and feasible alternative to conventional agriculture, evidenced by the many organic farms present currently.¹⁵⁰

According to DPR's regulations, the secretary must reevaluate a pesticide when it meets one of the twelve conditions outlined in the regulations.¹⁵¹ Based on the previous sampling of studies and current events, glyphosate must be reevaluated because it meets at least four of the conditions outlined in the regulations. In addition to the information above, California operates its own monitoring stations that prove some of the most vulnerable citizens are at risk. This factor is not listed in the DPR regulations, but should receive special attention to reevaluate glyphosate for a complete ban.

iii. California Operates Monitoring Stations that Show Glyphosate Puts Most Vulnerable Citizens at Risk

Monitoring stations throughout California are operated by DPR to collect data on the amount of air pollutants that exist in the state.¹⁵² These monitoring stations determine air quality throughout the state.¹⁵³ The monitoring stations provide useful oversight data and indicate where the majority of pollution is located.¹⁵⁴ This information, combined with pesticide use reports, helps pinpoint where the greatest pesticide pollution

147. CAL. CODE REGS. tit. 3, § 6221(k) (2019).

148. Watts et al., *supra* note 39, at 74.

149. *Id.*

150. UNITED STATES DEPARTMENT OF AGRICULTURE: SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION: TRANSITIONING TO ORGANIC PRODUCTION, at 4 [hereinafter TRANSITIONING].

151. CAL. CODE REGS. tit. 3, § 6221 (2019).

152. GUIDE, *supra* note 121, at 55.

153. GUIDE, *supra* note 121, at 55.

154. *Id.*

is generated in the state and the most affected communities.¹⁵⁵ OEHHA conducts this same process with its CalEnviroScreen screening tool.¹⁵⁶ For example, the CalEnviroScreen tool identifies many census tracts within the Fresno area as ranking within the 95–100 percentile.¹⁵⁷ This ranking puts those communities into a category called “SB 535 Disadvantaged Communities.”¹⁵⁸

A disadvantaged community is identified by the California Environmental Protection Agency (“Cal EPA”) using criteria like geographic, socioeconomic, public health, and environmental hazard criteria, as well as a disproportionate burden from environmental pollution, low-income, high-unemployment, and low-level of educational attainment.¹⁵⁹ The Cal EPA has identified eighty three census tracts, home to over 380,000 California residents, within Fresno County that are classified as SB 535 disadvantaged communities.¹⁶⁰ Fresno County is also one of the top California users of glyphosate.¹⁶¹ The top five users of glyphosate in Fresno also applied over 600,000 pounds of the pesticide in 2016.¹⁶² There is insufficient data to determine how much was applied by every user or farmer, but the figure likely exceeds 600,000 pounds. This begs the question: why does California allow a known carcinogen to be sprayed in high quantities in communities classified as the most disadvantaged? The connection between disadvantaged communities and pesticide exposure potential should be a factor in California’s decision to reevaluate glyphosate’s registration for use in the state.

Environmental justice groups have started to use data like this to advocate for a ban of glyphosate. For example, Pesticide Action Network International (“PAN”), recently called for a highly hazardous pesticide ban and advocated for a switch from monoculture cropping systems that rely on chemicals, like glyphosate, to agroecology systems that do not require their use.¹⁶³ The Sierra Club, has also advocated for a glyphosate free approach

155. GUIDE, *supra* note 121, at 55.

156. CAL. OEHHA, SB 535 DISADVANTAGED COMMUNITIES—JUNE 2018 UPDATE (June 2018), <https://perma.cc/26MX-VH6H>.

157. *Id.*

158. *Id.*

159. CAL. HEALTH & SAFETY CODE § 39711 (West 2019).

160. CAL. OEHHA, SB 535 DISADVANTAGED COMMUNITIES: UPDATED JUNE 2017 (June 2017), <https://perma.cc/CF3Q-ABU>.

161. CAL. DEP’T OF PESTICIDE REG., PESTICIDE USE DATA 2016 BY COUNTY (2016), <https://perma.cc/P3XF-ERB8> [hereinafter “DATA 2016”].

162. DATA 2016, *supra* note 161.

163. *34 Years After the Bhopal Disaster: We Still Need a Highly Hazardous Pesticide Ban*, PESTICIDE ACTION NETWORK N. AM. (Dec. 8, 2018), <https://perma.cc/ZH8M-UWBK>.

to vegetation management.¹⁶⁴ Additionally, the Center for Food Safety partnered with the State of California to list glyphosate as a “probable carcinogen” under Proposition 65, despite Monsanto’s efforts to appeal the case.¹⁶⁵ The Center for Biological Diversity (“CBD”) also tracked the use of glyphosate and found that 54% of glyphosate is applied in eight of the poorest counties in California.¹⁶⁶ CBD calls for a ban of glyphosate, citing DPR’s obligation to ensure their programs do not have a disparate impact based on race.¹⁶⁷ CBD’s call for DPR action is based on a 2014 California Department of Public Health study, which found that Hispanic children are forty-six times more likely than white children to go to school near hazardous amounts of pesticide use.¹⁶⁸

V. Recommendations

A. California Should Suspend Glyphosate Use Upon Reevaluation

According to DPR’s guidebook, DPR may “refuse to register a product because of potential effects on workers in California’s labor-intensive agriculture.”¹⁶⁹ The potential effects of glyphosate on workers in California’s labor-intensive agriculture industry was demonstrated by the outcome in *Johnson v. Monsanto*.¹⁷⁰ The case is currently on appeal, but the plaintiff successfully argued that he became ill with non-Hodgkin’s lymphoma after working with glyphosate based pesticides.¹⁷¹ In addition to

164. Sharon Rushton, Ann Spake & Laura Chariton, *The Unintended Consequences of Using Glyphosate*, SIERRA CLUB 1, 27 (Jan. 2016), <https://perma.cc/4DB6-22V3>.

165. *CFS and State of California Win Appeal Affirming Listing of Glyphosate Pesticide as Probable Carcinogen Under Proposition 65*, CTR. FOR FOOD SAFETY (Apr. 19, 2018), <https://perma.cc/3NEP-Y464>.

166. Press Release, CTR. FOR BIOLOGICAL BIODIVERSITY, *Analysis: California’s Poorest Counties Hit Hardest by Spraying of Glyphosate*, (Nov. 2, 2015), <https://perma.cc/7LV6-6KUL>.

167. *Id.*

168. *Id.* (“A 2014 California Department of Public Health study showed that Hispanic children were 46 percent more likely than white children to attend schools near hazardous pesticide use. The California Department of Pesticide Regulation has an obligation to ensure that pesticide programs and policies do not result in a racially disparate impact. Title VI of the Civil Rights Act and California Government Code § 11135 prohibit such racial discrimination . . . [W]e need to shift our agricultural system away from chemically intense practices all together in order to safeguard human health and the environment”).

169. GUIDE, *supra* note 121, at 26.

170. Egelko & Fimrite, *supra* note 4.

171. *Id.*

the *Johnson* case, California also listed glyphosate as a carcinogen.¹⁷² With this in mind, the communities that work in the California agriculture industry are increasingly at risk of contracting negative health consequences simply because of where they live and work.¹⁷³ The combined effects of occupational hazards and living in some of the most disadvantaged communities in California is enough for DPR to follow their guidelines and suspend the license for glyphosate in California.¹⁷⁴ The guidelines state that upon reevaluation, DPR may refuse to register a product because of its potential effect on workers.¹⁷⁵ If glyphosate effects workers, and these workers spray large quantities of the pesticide, it is highly likely that other people are contracting similar ailments to the plaintiff in *Johnson*. Therefore, Cal. EPA and DPR should suspend the registration of glyphosate in California.

California also much act because international law does not protect the citizens of California. The Rotterdam Convention cannot protect Californians because it does not stop the trade of the chemical, but instead sets trade requirements. If glyphosate was listed in the Rotterdam Convention, international trade would continue and glyphosate could still be used. The chemical could still be sprayed on food outside of California and then reimported.

B. Humans Have a Right to a Healthy Environment

The right to a healthy living environment is grounded in international environmental law. This principle provides a framework for California to follow to ban the use of glyphosate. International environmental law protects individuals' rights to a healthy living environment through the International Covenant on Economic, Social, and Cultural rights and the United Nations Conference on the Human Environment.¹⁷⁶

The International Covenant on Economic, Social and Cultural Rights states that everyone has a right "to the highest attainable standard of physical and mental health."¹⁷⁷ A state must take steps to achieve these rights for its citizens, which includes "the healthy development of the child"

172. *Glyphosate Listed Effective July 7, 2017*, *supra* note 40.

173. SB 535 DISADVANTAGED COMMUNITIES—JUNE 2018 UPDATE, *supra* note 156; DATA 2016, *supra* note 161; CAL. EMP. DEV. DEP'T, FRESNO COUNTY PROFILE (2019).

174. CAL. CODE REGS. tit. 3, § 6221 (2019); GUIDE, *supra* note 121, at 26.

175. CAL. CODE REGS. tit. 3, § 6222(a) ("The director shall also reevaluate a pesticide when certain factors have been found such as, but not limited to: public or worker health hazard").

176. G.A. Res. 2200A (XXI), art. 11.1, ¶ 1 (Jan. 3, 1976).

177. G.A. Res. 2200A (XXI), art. 12, ¶ 1 (Jan. 3, 1976).

and “the improvement of all aspects of environmental and industrial hygiene.”¹⁷⁸

In addition, the United Nations Conference on the Human Environment (Stockholm Conference) states that “the natural resources of the earth, including the air, water, land, flora, and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.”¹⁷⁹

As demonstrated earlier, glyphosate is the most commonly used pesticide in the United States.¹⁸⁰ Glyphosate has been found to contaminate air, water, and food.¹⁸¹ Large quantities of the pesticide are sprayed on open fields, leading to widespread exposure to the chemical.¹⁸² Thus, glyphosate has found its way into human blood streams and caused disease in people who have been exposed to it in large quantities.¹⁸³ These factors illustrate that glyphosate is an environmental toxin that needs strict regulation. Through the principles set out in the Stockholm Convention and the International Covenant on Economic, Social and Cultural Rights, states can use soft law guidelines from international environmental law to take action and curb the effects of this damaging pesticide.

C. Humans Have a Right to Clean Water

In 2012, with the passage of AB 685, California became the first state in the United States to use international environmental law and legislatively recognize a human right to clean water.¹⁸⁴ The law mandates that “every human being has the right to safe, clean, affordable, and accessible water

178. *Id.* ¶¶ 2(a)–(b).

179. U.N. Conference on the Human Environment, *Stockholm Declaration on the Human Environment*, Principle 2, U.N. Doc. A/CONF.48/14/Rev.1 (June 5-16, 1972).

180. Benbrook, *supra* note 9, at 1 (“In the U.S., no pesticide has come remotely close to such intensive and widespread use.”) (quoting Abstract).

181. *Id.*

182. *Id.* at 1 (“In 2014, farmers sprayed enough glyphosate to apply ~1.0 kg/ha (0.8 pound/acre) on every hectare of U.S.-cultivated cropland and nearly 0.53 kg/ha (0.47 pounds/acre) on all cropland worldwide.”) (quoting Abstract).

183. Alice Park, *A Weed Killer Is Increasingly Showing up in People’s Bodies*, TIME MAG. (Oct. 26, 2017), <https://perma.cc/MZ4R-5Z5Z>; see also Paul J. Mills et al., *Excretion of the Herbicide Glyphosate in Older Adults Between 1993 and 2016*, 318 JAMA 1610, 1610–11 (Oct. 24-31, 2017).

184. State Water Resources Control Bd. Res. 2016-0010 (Cal. 2016) (“With the enactment of Water Code section 106.3, on September 25, 2012, California became the first state in the nation to recognize legislatively the human right to water, following two other state’s recognition of the right in their respective constitutions.”) [hereinafter Res. 2016-0010]; Assem. B. 685, 2012 Leg., Reg. Sess. (Cal. 2012).

adequate for human consumption.”¹⁸⁵ Included in the law is a directive that “all relevant state agencies . . . shall consider” the right to safe, clean, affordable, and accessible water.¹⁸⁶ In response, the State Water Resources Control Board (“SWRCB”) adopted a resolution, which reaffirmed SWRCB’s commitment to providing clean water to Californians.¹⁸⁷ The resolution states that SWRCB will prevent or address pollution and contamination issues related to discharges, that threaten drinking water and human health.¹⁸⁸ The SWRCB may consider all solutions necessary to provide clean water to Californians.¹⁸⁹ In addition, California law established the Office of Sustainable Water Solutions within SWRCB, to help bring permanent and sustainable drinking water to underserved and disadvantaged communities.¹⁹⁰

Returning to the disadvantaged communities in Fresno, Fresno Unified has reviewed the dangers of glyphosate and is now considering a ban.¹⁹¹ According to SWRCB, Fresno county has twenty-seven “out-of-

185. CAL. WATER CODE § 106.3(a) (2019) (“It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.”).

186. CAL. WATER CODE § 106.3(b) (2019) (“All relevant state agencies, including the department, the state board, and the State Department of Public Health, shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.”).

187. Res. 2016-0010, *supra* note 184.

188. *Id.* ¶ 6 (“Preventing and/or addressing discharges that could threaten human health by causing or contributing to pollution or contamination of drinking water sources of waters of the state, are among the Water Boards’ highest priorities, and such discharges should be regulated to attain the highest water quality which is reasonable, considering all demands being made on those waters and the total values involved.”).

189. *Id.* (“When regulating discharges that could threaten human health by causing or contributing to pollution or contamination of drinking water sources, the Water Boards may consider all solutions for ensuring safe drinking water, including providing replacement water as an interim solution while long- term water quality solutions are developed.”).

190. *Id.* ¶ 11 (“Water Code section 189 established the Office of Sustainable Water Solutions within the State Water Board “to promote permanent and sustainable drinking water and wastewater treatment solutions to ensure effective and efficient provision of safe, clean, affordable, and reliable drinking water and wastewater treatment services,” focusing on, among other actions, addressing financial and technical assistance needs for disadvantaged communities, and promoting regional solutions to communities unserved or underserved by public water systems and wastewater treatment systems. “Disadvantaged community” is defined as “a community with an annual median household income that is less than 80 percent of the statewide annual median household income.” (Wat. Code, § 79702, subd. (j) (incorporating Water Code section 79505.5))”).

191. Aleksandra Appleton, *Fresno Unified Will Consider a Ban on Roundup, Citing Cancer Risks to Staff and Students*, THE FRESNO BEE (Dec. 13, 2018), <https://perma.cc/D2KV-ZXES>.

compliance” public water systems.¹⁹² This indicates that SWRCB needs to act in these communities and help provide clean water. SWRCB has just begun collecting data on this topic, and has limited datasets on their website. However, these communities need to be protected from glyphosate by combining several California agency determinations, all of which were explored previously in this paper. For example, SWRCB has a statutory mandate to prevent and/or address polluted water, to provide clean water as a human right.¹⁹³ DPR’s pesticide use reports show that Fresno county applies some of the highest amounts of glyphosate in the state.¹⁹⁴ Following the IARC report, OEHHA also made the determination that glyphosate is a carcinogen.¹⁹⁵ Research from the U.S. Geological Survey found that 39.4% of tested samples of soil, surface water, ground water, and precipitation in the United States contained glyphosate.¹⁹⁶ The findings and actions of these agencies suggests that SWRCB has an obligation to prevent glyphosate from entering the drinking water of humans, who now have a right to clean water.

D. Alternative Soft Law Approach – Organic Labeling

Organic agriculture is the safest alternative to using pesticides like glyphosate. The organic industry has grown significantly over the years. Organic agriculture gained fame in the 1970s in response to increased environmental awareness and consumer demand.¹⁹⁷ The organic industry was originally regulated by individual entities like California Certified Organic Farmers (“CCOF”) and Oregon Tilth.¹⁹⁸ These organizations acted as independent regulators and verified whether the farms and the food they

192. CAL. STATE WATER RESOURCES CONTROL BOARD, PUBLIC WATER SYSTEM COMPLIANCE STATUS: SUMMARY OF PUBLIC WATER SYSTEM EXCEEDANCE/COMPLIANCE STATUS (Dec. 19, 2018), <https://perma.cc/YY4B-S6PL>.

193. WATER § 106.3 “It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.”

194. DATA 2016, *supra* note 161.

195. CAL. OFF. OF ENVTL. HEALTH HAZARD ASSESSMENT, GLYPHOSATE LISTED EFFECTIVE JULY 7, 2017, AS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER (June 26, 2017), <http://perma.cc/V66G-MRQZ> (“The law requires that certain substances identified by the International Agency for Research on Cancer (IARC) be listed as known to cause cancer under Proposition 65. Labor Code section 6382(b)(1) refers to substances identified as human or animal carcinogens by IARC.”).

196. Rushton, Spake & Chariton, *supra* note 164, at 7 (1,470 samples contained glyphosate out of a total of 3732 samples).

197. TRANSITIONING, *supra* note 150.

198. *Id.*

were producing met the requirements of an organic label.¹⁹⁹ The requirements for each organization varied slightly, but the primary overlap required farmers to grow their food without the use of chemical pesticides.²⁰⁰ The organic label gave consumers a choice on whether to purchase food that was grown without pesticides, rather than food that was grown presumably, with pesticides.²⁰¹ The certification by these non-profits acted as a soft law approach to regulate the use of pesticides, by giving farmers an incentive to reach a market that preferred organic food. Consumers began to demand more organic food and farmers responded by increasing the acreage of organic from 935,450 acres in 1992 to 4,003,973 in 2005.²⁰² This signaled to the United States Government that organic agriculture was a serious industry.

In 1990, Congress passed the Organic Foods Production Act, which directed the United States Department of Agriculture (“USDA”) to develop national standards for organic production. The final rules were implemented in the fall of 2002.²⁰³ By incorporating various elements from the non-profit verifiers, the national standards turned CCOF and Oregon Tilth standards into hard law, by requiring farmers to comply with mandated requirements, inspections, and fees, in order to label and sell their food as organic.²⁰⁴ Organic agriculture is safer for the environment because the national standards mandate that “to be sold or labeled as “100 percent organic,” “organic,” or “made with organic . . . the product must be produced and handled without the use of synthetic substances and ingredients.”²⁰⁵

E. Cumulative Risk Assessment is a Useful Tool but Falls Short of Protecting Vulnerable Groups

The cumulative risk assessment approach is another approach used by California to achieve a fair and balanced means of regulating chemicals.²⁰⁶ However, similar to the soft-law approach mentioned above, this approach falls short because glyphosate can still be used under the risk assessment

199. TRANSITIONING, *supra* note 150.

200. *Id.*

201. *Id.* at 1–2.

202. TRANSITIONING, *supra* note 150, at 2 (citing U.S. Certified Organic Production, Economic Research Service, USDA).

203. *Id.* at 4.

204. *Id.*

205. 7 C.F.R. § 205.105(a) (2011).

206. CAL. DEP’T OF PESTICIDE REG., ASSESSING THE HEALTH RISK OF PESTICIDES (n.d.).

approach.²⁰⁷ California DPR currently has a community air monitoring program with four main objectives, one of which is to “estimate cumulative exposure to multiple pesticides with common modes of action.”²⁰⁸ This network of air monitoring devices provides data on long-term exposure to thirty two selected pesticides, which DPR monitors based on the amount of the pesticide used and the volatility (how much of the chemical goes into the air), DPR priority, and suitability for analysis.²⁰⁹ DPR monitors the air in specific communities based on the amount of pesticides used and demographics like the number of children and farmworkers present for one twenty-four hour period a week.²¹⁰ DPR does not monitor every potential pesticide, under the belief that the single twenty-four hour period per week is sufficient data on long-term concentrations of a pesticide in the area.²¹¹ DPR’s most recent Air Monitoring results in 2017, shows that DPR does not monitor glyphosate as one of the thirty-two chemicals.²¹² This demonstrates a gap in the knowledge on the prevalence of glyphosate in disadvantaged communities. Aside from the data of on the amount of pesticide used on a farm, DPR does not track how much of the pesticide contaminates the environment where these disadvantaged communities live, the air they breathe, or the water they drink.

Other scholars have criticized a cumulative risk approach to regulating pesticide use, mainly for its short comings of protecting disadvantaged communities.²¹³ The cumulative risk approach is less effective than a complete ban because the private burdens are not evenly distributed.²¹⁴ This causes some communities to be more burdened with exposure than others.²¹⁵ In a recent study, researchers documented that poor and uneducated individuals and their communities were more likely to suffer from chronic toxic exposure to chemicals in the environment.²¹⁶

207. CAL. DEP’T OF PESTICIDE REG., *ASSESSING THE HEALTH RISK OF PESTICIDES* (n.d.).

208. GUIDE, *supra* note 121, at 85.

209. *Id.* at 85–86.

210. *Id.* at 86.

211. *Id.*

212. CAL. DEP’T OF PESTICIDE REG., *AIR MONITORING NETWORK RESULTS (2017)*, <https://perma.cc/UZT8-ZAYU>.

213. Sanne H. Knudsen, *Regulating Cumulative Risk*, 101 MINN. L. REV. 2313, 2313–96 (2017).

214. *Id.* at 2362.

215. Knudsen, *supra* note 213, at 2362.

216. *Id.* (“Noting that Professor O’Neill had document this risk in the Ecology Law Quarterly, and the National Environmental Justice Advisory Council also found similar evidence.”).

Additionally, there is a disproportionate burden of pesticide exposure in rural communities because of the use of pesticides on farms and the disproportionate impact on farmworkers and their families.²¹⁷ This critique confirms real results found in California, as evidenced by the DPR air monitoring program, and the amount of pesticides sprayed in disadvantaged communities throughout California. As discussed earlier, most of the disadvantaged communities in California also received one of the highest applications of glyphosate.²¹⁸ To best protect these communities, farmers need to adopt safer alternatives of glyphosate, like organic farming, and the state needs to restrict the use of glyphosate to better protect farms and people in these communities.

VI. Conclusion

In conclusion, a ban on glyphosate is needed to protect underrepresented and underserved communities. International environmental law, like the Rotterdam Convention's requirement of prior informed consent do not adequately protect vulnerable individuals and communities. Soft law principles like organic labeling and cumulative risk assessments can help mitigate the negative effects of pesticides and offer useful alternatives to the agriculture industry. However, a complete ban is the most promising way to protect the environment and public health. A ban is supported by established customary principles of international law, particularly the precautionary principle and the right to a healthy environment. Further, the glyphosate industry has experienced mounting pressure in the last few years, demonstrating that states should take this issue seriously. California can act to protect its citizens, first by reevaluating its approach to licensing glyphosate for use in the state. Upon reevaluation, California should follow the lead of Mals, Italy and apply the appropriate principles to ban glyphosate, such as the precautionary principle and the right to a healthy environment. The most vulnerable communities in California depend on the state acting to protect their health and environment.

217. Knudsen, *supra* note 213, at 2362

218. SB 535 DISADVANTAGED COMMUNITIES: UPDATED JUNE 2017, *supra* note 160; DATA 2016, *supra* note 161.

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