IN THE SUPERIOR COURT OF THE STATE OF DELAWARE

STATE OF DELAWARE, *ex rel.* KATHLEEN JENNINGS, Attorney General of the State of Delaware, Plaintiff, v. MONSANTO COMPANY; SOLUTIA, INC.; and PHARMACIA LLC, Defendants.	C.A. No. _____ CCLD TRIAL BY JURY OF 12 DEMANDED

COMPLAINT

Plaintiff State of Delaware, *ex rel.* Kathleen Jennings, Attorney General of the State of Delaware (the "State" or "Delaware"), files this Complaint against Defendants Monsanto Company, Solutia, Inc., and Pharmacia LLC, inclusive (collectively, "Defendants" or "Monsanto"), and alleges as follows:

I. INTRODUCTION

1. The State brings this action to protect the health, safety, and welfare of its people and its natural environment.

2. Delaware is small in size, but big on water. Nearly 19% of the State is water. Delaware, with a surface area of only 1,981 square miles, has 2,363 miles of rivers, as well as 2,107 miles of intermittent streams, ditches, and canals, comprising 45 distinct watersheds; the State also has 11,491 acres of lakes and

ponds, nearly 300,000 acres of tidal and nontidal wetlands, 841 square miles of estuarine waters, and 25 miles of Atlantic Ocean coastline. Life throughout the State is wedded to water. Delaware is a biologically diverse state with hardwood forests, swamps, and salt marshes that support over 400 species of mammals, birds, reptiles and amphibians. The Delaware Bay area, as a critical stopover on the Atlantic Flyway, hosts the second largest population of migrating shorebirds in North America. Delaware's wetlands and waterways also support important sectors of the State's economy. For generations, Delawareans have worked the water, from the watermen harvesting blue crabs, clams, and oysters, to the river pilots guiding ships from the mouth of the Delaware Bay to the ports upriver. Delawareans have a right to use and enjoy these resources for commerce, sustenance, recreation, and rejuvenation.

3. Unfortunately, many of Delaware's natural resources and environments are contaminated with polychlorinated biphenyls—persistent, bioaccumulative, and toxic chemicals known more commonly as "PCBs." PCBs do not occur naturally, yet today they persist throughout Delaware's waterways, upland areas, soils, sediments, aquatic life, mammals, and birds. Even where PCBs are present in very low concentrations in water and sediment, they will bioaccumulate in organisms and become concentrated at much higher levels within an organism than in the surrounding water and sediment. PCBs are readily

absorbed but not easily metabolized, and, because they are highly lipid soluble, tend to accumulate in fatty tissues. Bioaccumulation repeats at each step of the food chain, such that the PCBs are increasingly concentrated in the bodies of predators such as larger fish and fish-eating birds and mammals. This process is called biomagnification.

4. PCBs cause a wide range of systemic toxic effects in humans and animals, and they can seriously impair the endocrine, neurologic, and reproductive systems. PCBs have caused harm to eagles, osprey, and other birds, as well as various fish species throughout Delaware.

5. The vast majority of this PCB contamination throughout Delaware is a result of the actions of one company: Monsanto. Between 1935 and 1977, Monsanto was the only company in the United States to manufacture PCBs for widespread commercial use. Monsanto distributed PCBs widely, including throughout Delaware, for use in a broad array of products ranging from electrical equipment to lighting ballasts, from paint to caulking.

6. Despite knowing as early as 1937 that PCBs were toxic to humans and animals and that PCBs could escape into and contaminate the environment, Monsanto manufactured and sold PCBs until they were finally banned under

federal law.[1] Even when Monsanto had overwhelming evidence of the hazards that PCBs create, Monsanto continued to flood the country with these toxic materials. Monsanto's own internal documents show that it was not interested in protecting people or the environment; rather, its only concern was in protecting its balance sheet.

7. As public concerns about PCBs began to grow in the 1960s, Monsanto did not alert its customers or the public of its knowledge of the dangers of PCBs. Instead, Monsanto assembled an internal team and tasked it with deflecting criticism of both PCBs and the company itself. The team was told that Monsanto "can't afford to lose one dollar of business" from its PCB sales. Despite knowing that millions of pounds of highly toxic PCBs were being released into the environment every year, Monsanto worked to hide the dangerous and persistent effects of the hazardous chemicals because "selfishly too much Monsanto profit" would be lost if the company told the truth. Monsanto concealed from consumers, the State, the federal government, and the general public its knowledge of the remarkably harmful effects of PCBs and Monsanto's role in introducing these toxins to the surrounding environment, deciding instead that its financial bottom

[1] Toxic Substances Control Act, 15 U.S.C. § 2605(e)(3)(A)(i) (eff. Jan. 1, 1977) ("[N]o person may manufacture any polychlorinated biphenyl after two years after January 1, 1977").

line—and, later, its corporate reputation—were more important than the health and well-being of humans and the environment.

8. Today, Delaware bears the burden of Monsanto's decision to place profit above all else. The toxic legacy that Monsanto left Delawareans lives on, as PCBs persist in Delaware's lands, waterways, sediments, soils, and in the bodies of animals and humans. It has caused harm to aquatic, marine, and avian species, and poses ongoing risks to the health of Delaware's residents.

9. The State has incurred significant cleanup costs associated with the investigation and remediation of sites contaminated with PCBs, and it will continue to incur such costs long into the future. The presence of PCBs in Delaware's waterways and sediments, on Delaware's land, and throughout Delaware's natural environment has had significant adverse impacts on the availability of Delaware's natural resources for recreational, commercial, cultural, and aesthetic uses, and their presence will continue to have such adverse impacts as long as they persist in Delaware's natural environment.

10. The State brings this action in its sovereign capacity as trustee for all natural resources within its borders, which it holds and protects for the benefit of all Delawareans. Those natural resources include the riverbed of every river within the State; all waters within the State from all sources of water supply including underground aquifers; and all fish, wildlife, and fish and wildlife habitat areas

throughout the State. Through this action, the State seeks to recover damages from Monsanto for the costs that the State has incurred, and will continue to incur, to remediate the widespread damage caused by the presence of Monsanto's PCBs on Delaware's lands, in Delaware's waters, and throughout Delaware's natural environment.

II. PARTIES

A. Plaintiff

11. Plaintiff, State of Delaware, *ex rel.* Kathleen Jennings, Attorney General of the State of Delaware, brings this action in the State's capacity as sovereign, in its proprietary capacity, in its *parens patriae* capacity and as an exercise of its authority to protect public trust resources.

12. The Attorney General, as the chief law officer of the State, has the power and authority to initiate and maintain this action on behalf of the State.

13. The State holds in trust for the public all waterways within the State, including the public right to navigation and fishing on the foreshore. It is the policy and responsibility of the State to protect, conserve, and control the land, water, and air resources of the State to assure their reasonable and beneficial use in the interest of the people of the State. *See* 7 *Del. C.* § 6001. The State is also the trustee of all natural resources—including land, water, wildlife, and habitat areas—within its borders. As trustee, the State holds these natural resources in trust for all

Delawareans—preserving, protecting, and making them available to all Delawareans to use and enjoy for recreational, commercial, cultural, and aesthetic purposes.

B. Defendants

14. Defendant Monsanto Company ("Monsanto") is a Delaware corporation with its principal place of business in St. Louis, Missouri.

15. Defendant Solutia Inc. ("Solutia") is a Delaware corporation with its headquarters and principal place of business in St. Louis, Missouri. Solutia, Inc. is a wholly owned subsidiary of Eastman Chemical Company.

16. Defendant Pharmacia LLC ("Pharmacia"), formerly known as "Pharmacia Corporation" and successor to the Monsanto Chemicals Company, is a Delaware limited liability company with its principal place of business in Peapack, New Jersey. Pharmacia LLC is a wholly owned subsidiary of Pfizer, Inc.

17. During the period between 1929 and 1977, the original Monsanto Company ("Original Monsanto") owned and operated an agricultural products business, a pharmaceutical and nutrition business, and a chemical products business. As part of its chemical products business, Original Monsanto began manufacturing PCBs in the 1930s. It continued manufacturing PCBs until 1977, shortly before the manufacture and sale of PCBs in the United States was prohibited by federal law.

18. Beginning in approximately 1977, Original Monsanto underwent a series of corporate transactions that caused its businesses to spin off into three separate entities. The corporation now known as Monsanto operates Original Monsanto's agricultural products business.

19. Defendant Solutia now operates Original Monsanto's chemical products business. Solutia was organized for the purpose of owning and operating the chemical products business, and therefore has assumed all operations, assets, and liabilities of that business.

20. Defendant Pharmacia now operates Original Monsanto's pharmaceutical business.

21. All Defendants have entered into agreements to share or apportion liabilities, and/or to indemnify one or more other entities, for claims arising from Original Monsanto's chemical products business, including claims arising from Original Monsanto's manufacture and sale of PCBs. Monsanto, Solutia, and Pharmacia are otherwise jointly and severally liable to third parties such as Delaware for the liabilities resulting from the acts and omissions of Original Monsanto as a matter of law.

22. Throughout this Complaint, and for the purposes of this litigation, Monsanto, Solutia, and Pharmacia collectively will be referred to as "Defendants" or "Monsanto."

III. JURISDICTION AND VENUE

23. Jurisdiction of this Court is proper under Article IV, Section 7, of the Delaware Constitution and 10 *Del. C.* § 541.

24. This case qualifies for assignment to the Superior Court Complex Commercial Litigation Division because the amount in controversy exceeds one million dollars ($1,000,000).

25. This Court has personal jurisdiction over Defendants because each Defendant is, or was during the relevant time period, incorporated in Delaware or licensed to do business in Delaware; is transacting or has transacted business in Delaware; or has other significant contacts with Delaware. Each Defendant has sufficient contacts with Delaware to give rise to the current action, has continuous and systematic contacts with Delaware, or has consented either explicitly or implicitly to the jurisdiction of this Court.

26. The State has standing to bring this action as an owner and trustee of land and water and as trustee of certain natural resources described above and throughout this Complaint.

27. The State also brings this action in its *parens patriae* capacity and thereby acts on behalf of all Delawareans affected by the presence of PCBs in Delaware's environment. The State has a quasi-sovereign interest in the well-being, health, and comfort of all Delawareans, who are threatened by the

persistence of PCBs throughout the State's lands and natural environment. Such injuries include harm to Delaware businesses, increased risk of harm to human health, increased risk of harm to the vitality of Delaware's fish and wildlife species, and decreased availability of Delaware's natural resources for commercial, recreational, tourist, cultural, and aesthetic purposes.

28. The State also has a proprietary interest in the land and resources it owns, controls, manages, or holds in trust. The persistence of PCBs in and on lands owned, controlled, managed, or held in trust by the State has caused injury to, and has threatened, the State's proprietary interests. The State has suffered injuries to those interests including, but not limited to, costs that it has incurred remediating buildings and other property contaminated with PCBs and diminished property value of its buildings and land as a result of PCB contamination. In addition, the State has incurred cleanup and remediation costs at other properties in the State. The State anticipates that it will incur significant additional costs to clean up and remediate additional lands (including subaqueous) that it owns, controls, or holds in trust and sediments in the waterways that are contaminated by PCBs.

29. Only this Court has subject matter jurisdiction over the State's claims. To the extent that Defendants allegedly acted or failed to act at the direction of the United States or any agency thereof, or any officer (or any person acting under that

officer) of the United States or any agency thereof, in an official or individual capacity, for or relating to any act under color of such office, the State does not seek relief for damages caused by such actions or failures to act. To the extent that Defendants allegedly acted or failed to act pursuant to any federal regulation or specification, the State likewise does not seek relief for any damages caused by such actions or failures to act. The State does not seek relief for damages caused by actions or failures to act in connection with any government contract deemed necessary for the national defense, and the State does not seek relief for damages to any federal enclave. The State does not, by this Complaint, pursue any form of relief that arises under federal law or otherwise serves as a basis for federal jurisdiction.

IV. GENERAL ALLEGATIONS

A. PCBs Are Toxic Chemicals That Persist in the Natural Environment.

30. Polychlorinated biphenyls ("PCBs") are a group of human-made organic compounds formed by the addition of between one and ten chlorine atoms to the aromatic hydrocarbon "biphenyl." In each molecule of PCB, the number and location of chlorine atoms determines the compound's physical and chemical properties. Currently, 209 unique chemical configurations of PCBs have been identified; these configurations are known as "congeners."

31. Based on their chemical composition, PCBs fall within the family of chemical compounds known generally as "chlorinated hydrocarbons." Other chlorinated hydrocarbons include dioxins (for example, Agent Orange), DDT, Chlordane, Aldrin, and similar pesticides.

32. PCBs are not naturally occurring substances. There are no known natural sources of PCBs in the environment.

33. The physical properties of each PCB congener vary depending on the congener's degree of chlorination. Most congeners are colorless or slightly yellow, odorless, crystalline compounds.[2] Others, however, may be liquid mixtures with varying degrees of viscosity.[3] Commercially, PCBs generally were manufactured and produced as complex mixtures of PCB congeners, not as single PCB compounds.[4]

34. Commercial manufacture and production of PCBs began in the late 1920s. Monsanto manufactured and distributed PCBs using the trade name "Aroclor." Monsanto assigned each Aroclor mixture a unique number (e.g., Aroclor 1221, Aroclor 1232, Aroclor 1242), the last two digits of which generally referred to the proportion of chlorine in the mixture.

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[2] International Agency for Research on Cancer (IARC), *Polychlorinated Biphenyls and Polybrominated Biphenyls*, IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Vol. 107, 51 (2016), https://publications.iarc.fr/131 [hereinafter IARC Monograph].

[3] *Id.*

[4] *Id.* at 53.

35. Since the onset of their commercial production in the United States by Original Monsanto, PCBs were used extensively for industrial and commercial purposes, as well as in consumer products.[5] PCBs are fire resistant because of their high flash points, and they are also minimally water soluble, chemically stable, and possess excellent dielectric properties. Because PCBs are chemically inert, they do not easily degrade; neither do they react to acids, alkalis, or oxidants. The half-life associated with PCBs can be decades-long;[6] thus, they will persist in the natural environment for centuries if they are not remediated.

36. PCBs are also lipophilic, which causes them to accumulate in lipid-rich tissues and substances, such as the fatty tissues of wildlife, birds, fish, and other animal life, including humans.[7]

37. PCBs are highly toxic chemicals that adversely impact human health and the environment. For humans, PCB exposure can cause serious liver damage, depressed immune system function, skin conditions such as acne and rashes, significant irritation of and harm to the nose and lungs, gastrointestinal discomfort, changes in the blood and liver, depression, fatigue, and learning capacity impairment.[8] The Environmental Protection Agency ("EPA") has also concluded

[5] *Id.* at 71.

[6] Agency for Toxic Substances & Disease Registry ("ATSDR"), U.S. Dep't of Health & Human Servs., *Toxicological Profile for Polychlorinated Biphenyls (PCBs)* 326–28 (Nov. 2000), https://www.atsdr.cdc.gov/toxprofiles/tp17.pdf [hereinafter ATSDR Toxicology Profile].

[7] IARC Monograph, *supra* note 2 at 431.

[8] *See generally* ATSDR Toxicology Profile, *supra* note 6 at 90–283.

that PCBs are probable human carcinogens. Children are particularly susceptible to harm by PCB exposure, and they can be exposed to PCBs both prenatally and through breast milk. Because of their physiology and behavior, children may also be particularly vulnerable to altered development due to PCBs.[9]

38. In 1996, EPA reassessed PCB carcinogenicity based on data related to Aroclors 1016, 1242, 1254, and 1260. EPA's reassessment was peer-reviewed by fifteen experts, all of whom agreed that PCBs are probable human carcinogens. EPA also confirmed in its reassessment what scientists had established years earlier—that PCBs are associated with serious non-cancer health effects, including harm to the human and animal immune, reproductive, nervous, and endocrine systems.[10]

39. PCBs are toxic to many animals, including fish, mammals, pinnipeds (e.g., seals and sea lions), and birds. Because PCB transport patterns show a gradual redistribution toward the marine environment, fish-eating marine mammals are potentially the most sensitive wildlife receptors to PCB exposure. Studies show that PCB accumulation impairs fish and wildlife reproduction because of

[9] *Id.* at 381 ("Younger children may be particularly vulnerable to PCBs because, compared to adults, they are growing more rapidly and generally have lower and distinct profiles of biotransformation enzymes, as well as much smaller fat depots for sequestering the lipophilic PCBs."); *id.* at 7 ("Children . . . may accidentally eat some PCBs through hand-to-mouth behavior, such as by putting dirty hands or other soil/dirt covered objects in their mouths, or eating without washing their hands. Some children also eat dirt on purpose; this behavior is called pica. Children could also be exposed by playing with old appliances or electrical devices that contain PCBs.")

[10] *See* United States Environmental Protection Agency, *PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures* (Sept. 1996), https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=12486.

increased embryotoxicity and decreased egg viability and hatchability, due, in part, to thinning eggshell thickness. PCBs also can cause neurological impairment in wildlife, including disruptions to the nervous system and changes in behavior, as well as endocrine-related impairments and dermal/ocular effects. Moreover, studies of minks and certain bird species have shown that PCB contamination correlates to population decline and reproductive impairment, particularly in fish-eating species.[11]

B. Monsanto Caused Hundreds of Millions of Pounds of PCBs to Enter and Contaminate the Natural Environment.

40. Commercial production of PCBs in the United States began in 1929 in Anniston, Alabama, by Swann Research, Inc., the corporate predecessor to Original Monsanto. Swann Research manufactured and distributed PCBs under the trade name "Aroclor," which Original Monsanto later trademarked.

41. Original Monsanto purchased Swann Research in 1935, in part because of the high profits that Swann Research was generating through the manufacture, sale, and distribution of PCBs and PCB-containing materials.

42. Original Monsanto—and its corporate predecessor Swann Research—was the only manufacturer in the United States that intentionally produced and distributed PCBs for widespread commercial use between 1930 and 1977.

[11] *See, e.g.*, ATSDR Toxicology Profile, *supra* note 6 at 285–95.

43. Original Monsanto distributed PCBs to its customers on a widespread basis. Its annual production peaked in 1970, when Monsanto produced a total volume of 39,000 metric tons of PCBs. Between 1957 and 1971, Monsanto produced twelve different Aroclor-branded PCB mixtures, each with a different chlorine content ranging from twenty-one to sixty-eight percent by weight. Between 1930 and 1977, Monsanto produced a total of 641,246 metric tons of PCBs in the United States. Monsanto produced PCBs at two plant locations: Anniston, Alabama, and Sauget, Illinois.

44. Monsanto developed, produced, and marketed PCBs for use in a wide range of commercial and industrial applications. PCBs were advertised and predominantly used as components of dielectric fluids—materials used for electrical insulation—in capacitors, transformers, and other electrical systems. Indeed, during the 1960s, dielectric fluid in capacitors and transformers accounted for fifty to sixty percent of the sales of PCBs in the United States. Other uses included, to name only a few, hydraulic systems, heat transfer and cooling systems, sealants and flame-retardant coatings, inks, adhesives, rubber products, plasticizers, carbonless copy paper, and paints.

45. PCBs enter the natural environment in a variety of ways. Many applications in which they were used—e.g., coolants, flame retardants, plasticizers, paint—are known as “open applications” and allow the chemicals to enter the

natural environment simply through use of the PCB-containing material. Even where PCBs were used in "closed applications," for example in capacitors and transformers, PCBs nevertheless escaped from these systems through leaks, maintenance, or by volatilizing into the air. And, because Monsanto did not tell the public of the dangers of PCBs, PCB-containing materials routinely were disposed of without regard to where the PCBs ultimately would end up. For example, companies often left old transformers filled with PCB-containing oils on the ground outside or in junk yards, allowing PCB-containing oil to drain onto the ground. As a result, hundreds of millions of pounds of PCBs have entered the natural environment, causing widespread contamination.

C. PCBs Persist in Humans and in Wildlife and Throughout the Natural Environment.

46. PCBs are now found worldwide at measurable levels throughout the environment, including in soils and sediments, water, fish, and wildlife.[12]

47. Once released into the environment, PCBs can migrate significant distances, transported by water or through the air. Because they are water insoluble, PCBs tend to fall through the water column when they reach a waterway, ultimately binding to sediments or other particulates. There, they either

[12] IARC Monograph, *supra* note 2 at 74.

persist for centuries or are transported downstream with sediment. PCBs also migrate through the air, either in the vapor phase or bound to particulates.

48. PCBs enter the food chain when plants or animals ingest them. As discussed above, the impact of PCBs on animals is magnified through the twin processes of bioaccumulation and biomagnification. Because PCBs are lipophilic, they tend to accumulate in animals' fatty tissues rather than being excreted by the animals' bodies. Biomagnification starts when a small animal—perhaps an insect—ingests materials containing PCBs. When, for example, a fish eats thousands of such insects over its lifetime, the PCBs in the insects accumulate in the fish's fatty tissues (bioaccumulation). Over the life of the fish, the concentration of PCBs in its tissues can reach significant levels. And, when a predator—such as a bigger fish, eagle, dolphin, or human—eats PCB-contaminated fish, the concentration of PCBs will increase yet again (biomagnification). Seals, whales, and eagles may eat thousands of fish over their lifetimes, and all the PCBs in those fish will remain in the predators' fatty tissues. According to the U.S. EPA, the concentration of some chemicals in the fatty tissues of top predators can be millions of times higher than the concentration in the open water.

49. After they enter the natural environment, PCBs also undergo a process known as "weathering." During the weathering process, a PCB compound goes through physical or chemical changes due to natural processes such as bacterial

action, accumulative and metabolic processes in higher biological organisms, or exposure to ultraviolet radiation. As a result of those changes, PCB congener patterns found in humans and in wildlife often are different from, and sometimes more harmful or concentrated than, a congener pattern found in commercially produced PCB-containing materials.

50. Human beings are exposed to PCBs through ingestion, inhalation, or direct contact with PCBs or PCB-containing materials and food. Humans may inhale PCBs that are emitted into the air, or they may be exposed through consumption of PCB-contaminated food. Because PCBs bioaccumulate in fish and other wildlife species and in domestic animals, humans often are exposed through the consumption of PCB-contaminated fish and other food products.

51. PCBs are transported through soil, sediment, air, and water. Because they attach so readily to particulate matter, they often are transported to remote areas far from the location of their initial release.

D. Monsanto Has Known Since At Least 1937 That PCBs Are Toxic.

52. Today, it is commonly known that PCBs are some of the most toxic and persistent chemicals in our environment. Monsanto, however, has known that since at least 1937. And by at least the 1950s, if not earlier, Monsanto had overwhelming evidence that PCBs escaped into the environment—even from closed systems—where they would persist indefinitely. Nevertheless, Monsanto

continued to produce, market, and distribute these dangerous substances for decades, despite knowing they could cause serious and significant harm to the environment and to humans.

53. Ample evidence shows that Monsanto knew of the dangers of PCBs very early on. For example, an internal Monsanto memorandum dated October 11, 1937, explained the toxic effects that Aroclors have on humans and animals: [13]

> Experimental work in animals shows that prolonged exposure to Aroclor vapors evolved at high temperatures or by repeated oral ingestion will lead to systemic toxic effects.
>
> Repeated bodily contact with the liquid Aroclors may lead to an acne-form skin eruption.

54. The very next year, Dr. Cecil Drinker of the Harvard School of Public Health presented Monsanto with the findings of his research, which further explained the toxic effects of PCBs and demonstrated that PCB exposure resulted in permanent liver damage in test animals.[14] Despite learning of the serious effects of PCB exposure through this and other sources, Monsanto nevertheless continued to produce PCBs without providing any warnings to the public or its customers.

55. On the rare occasions when its customers sought information about the hazards of PCBs, Monsanto minimized and dismissed those risks. For

[13] L.A. Watt internal memorandum (Oct. 11, 1937), https://cdn.toxicdocs.org/3Q/3QmvryyBGyG9mMZdvd9yZ0Mwy/3QmvryyBGyG9mMZdvd9yZ0Mwy.pdf.

[14] Cecil K. Drinker, *Report to the Monsanto Chemical Company* (Sept. 15, 1938).

example, in December 1947, in response to an inquiry from a customer, the Celanese Corporation of America, Monsanto directed the Celanese Corporation to Drinker's publications and noted that, according to that research, "Aroclor 1268 is almost non-toxic" but "[t]he vapors of other Aroclors studied are toxic and should be avoided."

56. Similarly, in 1949, Monsanto developed its own statement regarding the risks of Aroclors that it would give to inquiring clients and customers.[15] That statement noted "systemic toxic effects" but said the risk was "not significant":

> TOXICITY—Prolonged exposure to AROCLOR vapours will lead to systemic toxic effects. However, this is not significant except at high temperatures and then normal draught ventilation will remove any risk. . Acne-form skin eruptions may arise from continued bodily contact with liquid AROCLORS, but normal precautions and, if necessary, suitable garments provide adequate protection. Toxic effects will follow considerable oral ingestion, but this hazard is unlikely to be encountered.

57. But, throughout that time, Monsanto knew PCBs were toxic. For example, an internal memorandum from Elmer P. Wheeler, Monsanto's Manager of Environmental Health, to Mr. E. Mather, Monsanto's Chief Chemist, dated September 1, 1953, made clear that Monsanto knew that "Aroclors cannot be considered nontoxic."

[15] Interoffice Memorandum on Aroclor Toxicity from M.N. Strachan to J.R. Barrett (Aug. 30, 1949).

58. In 1955, Mather authored an internal report summarizing the "Process for the Production of Aroclors, Pyranols, etc. at the Anniston and at the Wm. G. Krummrich Plant." Attached to that report was an article authored by Robert M. Brown, Chief of the Industrial Hygiene Section of the City of St. Louis Department of Public Welfare, entitled "On the Toxicity of the 'Aroclors'" and published in *The Chemical Analyst* in September 1947. That article explains,

> There is need . . . to give warning [about PCBs]. For the toxicity of these compounds has been repeatedly demonstrated, both from the standpoint of their absorption from the inspired air, as well as from their effects in producing a serious and disfiguring dermatitis when allowed to remain in contact with the skin.

59. Remarkably, and notwithstanding the abundance of research demonstrating that PCBs have systemic toxic effects, Monsanto's Medical Director, Dr. R. Emmet Kelly, recommended to Monsanto that it need not conduct any additional toxicity testing of the chemical. The company worried more about possible legal implications than any harm to humans or the environment:

MCC's position can be summarized in this fashion. We know Aroclors are toxic but the actual limit has not been precisely defined. It does not make too much difference, it seems to me, because our main worry is what will happen if an individual developes any type of liver disease and gives a history of Aroclor exposure. I am sure the juries would not pay a great deal of attention to MACs.

We, therefore, review every new Aroclor use from this point of view. If it is an industrial application where we can get air concentrations and have some reasonable expectation that the air concentrations will stay the same, we are much more liberal in the use of Aroclor. If, however, it is distributed to householders where it can be used in almost any shape and form and we are never able to know how much of the concentration they are exposed to, we are much more strict. No amount of toxicity testing will obviate this last dilemma and therefore I do not believe any more testing would be justified.

Let's see what our discussions with Dr. Newman and yourself bring out.

60. Monsanto's disregard for human life and the environment, however, did not stop the most sophisticated consumers from conducting their own independent research on the hazards of PCBs. For example, the U.S. Navy rejected the use of PCBs in its submarines because it concluded that PCBs were too dangerous. The Navy reached that conclusion after conducting its own independent testing of PCBs, which revealed that "[t]he inhalation of 10 milligrams of [the PCB] Pydraul 150 per cubic meter or approximately 2 tenths of a part of the Aroclor component per million for 24 hours a day for 50 days caused, statistically, definite liver damage." Monsanto tried to change the Navy's mind, but the Navy ultimately decided that PCBs simply "would not be suitable for use in

submarines."[16] The Navy informed Monsanto that it "would not accept Pydraul 150 and probably no other fluid containing chlorine or chlorinated diphenyls."[17]

61. Since early in its commercial production of PCBs, Monsanto was well aware of PCBs' toxic effects. It knew that prolonged exposure to PCBs would lead to systemic toxic effects in both humans and animals. It knew that those systemic toxic effects could be caused either by inhalation of PCB vapors or direct contact with PCBs or PCB-containing materials. It declined to conduct its own independent testing. Others, however, did conduct testing, and their research demonstrated that exposure to PCBs, even at relatively low concentrations, was harmful to the health of both humans and the environment.

E. Monsanto Also Knew, Since at Least the 1950s, That PCBs Escaped Into the Environment, Where They Would Persist and Destroy the Natural Environment.

62. Throughout the 1940s and 1950s, scientists continued to report to Monsanto on the widespread, harmful effects of PCBs. Dr. Kelly continued to find himself in the position of having to explain, primarily to Monsanto's customers, that use of or exposure to Monsanto's PCBs may have caused the particular harm

[16] Memorandum from Elmer P. Wheeler to Philip L. Slayton on Toxicity of Pydraul 150 (Sept. 25, 1957).
[17] *Id.*

that the customer reported.[18] Yet Monsanto continued to increase the volume of PCBs it produced and sold.

63. Meanwhile, public awareness of the harmful effects of chlorinated hydrocarbons—at the time, primarily DDT—also increased. Detailed accounts of the toxic effects of DDT on the environment became more accessible to the public, triggering widespread concern for the continued use of chlorinated hydrocarbons more generally. In 1962, for instance, Rachel Carson authored *Silent Spring*, which was then known as the most thorough explanation, and effective denunciation, of industry practice with respect to the use and misuse of chlorinated hydrocarbons:

> In the less than two decades of their use, [dangerous chemicals] have been so thoroughly distributed throughout the animate and inanimate world that they occur virtually everywhere. They have been recovered from most of the major river systems and even from streams of groundwater flowing unseen through the earth. Residues of these chemicals linger in soil to which they may have been applied a dozen years before. They have entered and lodged in the bodies of fish, birds, reptiles, and domestic and wild animals so universally that scientists carrying on animal experience find it almost impossible to locate subjects free from such contamination. They have been found

[18] *See, e.g.*, Memorandum from R. Emmet Kelly to Richard Davis on Aroclor Exposure at Hexagon Laboratories (Feb. 2, 1961) ("Yesterday, Mr. Allen of the subject company called and stated he had two employees nauseated from exposure to a leak in a heat transfer unit that used Aroclor 1248."); Letter from Jack T. Garrett to S. Facini on Pydraul Exposure (Aug. 29, 1960) ("I would not expect [PCBs] to be very toxic to aquatic life. On the other hand, this is a surmise on my part since we have no tests on aquatic animals."); Memorandum from R. Emmet Kelly to O.F. Heasel on Pydraul Exposure (June 23, 1959) ("I think [they] are being overcautious in this matter, but I certainly can't give Pydraul an absolutely clean bill of health . . . ."); Letter from Joseph P. Allen to Emmet Kelly on Aroclor Exposure at Hexagon Laboratories (Feb. 14, 1961) (noting, in a letter to Kelly, that "two . . . plant personnel were exposed to hot Arochlor (1248) vapors generated by a broken pipe connection [and] the two men developed symptoms of Hepatitis and were confined to a hospital for approximately two weeks").

> in fish in remote mountain lakes, in earthworms burrowing in the soil, in the eggs of birds—and in man himself.

64. *Silent Spring* focused primarily on industry's use of DDT and other insecticide sprays made of chlorinated hydrocarbons, but during the 1960s the scientific research on the environmental and ecological effects of PCBs was also becoming more widely known. As a result, both the scientific community and Monsanto were becoming increasingly aware that PCBs were just as poisonous as, if not more poisonous than, DDT.

65. In 1966, an article summarizing the findings of Swedish researcher Soren Jensen was published in an article in the Swedish daily paper, Dagens Nyheter. The article described Jensen's findings:

> [PCB] is found in salmon and in pike. It is found in sea eagle living on fish. It is found on the surface of the needles of the fir trees, it is in the air. It is found in the hair of a [five-month-old] baby . . . .
>
> The scientists working with biocides have [found that] a group of poisons, Polychlorinated Biphenols (for short PCB) . . . are closely related to, and equally poisonous as, DDT.
>
> PCB is broken down considerably slower than DDT and gives rise to damage of liver and skin. PCB is not used as a[n] herbicide. It is not manufactured in Sweden but is supposed to [be] used by the industry to quite some extent. . . .
>
> Research Asst. S. Jensen has tested 200 fishes and a number of birds. He has taken several samples of air and has reached the conclusion that PCB is equally common in Nature as chlorinated hydrocarbons of the type of DDT, DDE, and Lindane. . . .

Monsanto circulated the article internally and, shortly thereafter, visited Jensen at the Stockholm University to "discus[s his] programme of work." Based on that discussion, Monsanto concluded that "there is no doubt that the chemical which is the subject of [Jensen's] investigation and the news release, is chlorinated diphenyl i.e. Aroclor."[19]

66. Monsanto's own research, conducted in the waterways adjacent to its Anniston manufacturing facility, demonstrated the seemingly limitless potential of PCBs for environmental destruction. In a study of bluegills caged in various locations, the results were dramatic:

> A branch of Snow Creek originating in the Monsanto Plant and flowing east . . . Result: All 25 fish lost equilibrium and turn on their sides in 10 seconds and all were dead in 3 ½ minutes.
>
> Snow Creek at a point where it is crossed by the Highway 21-Highway 78 cut-off . . . . Result: 10 fish were down after 1 hour and 40 minutes; all were down in 2 hours and 25 minutes. All were dead in 2 hours and 35 minutes.
>
> . . . .
>
> Anniston Sewage Treatment Plant – near the out-flow to Choccolocco Creek. . . . Result: All 25 fish were dead when the first check was made after 23.5 hours. Their condition suggested that they had died several hours earlier.[20]

[19] Memorandum from D. Wood to G.R. Buchanan on Soren Jensen Research (Jan. 26, 1967).
[20] Letter from Denzel Ferguson to L.C. Fuhrmeister on Caging Experiments (Nov. 2, 1966).

67. As Monsanto became more and more concerned about threats of negative publicity to its PCB business,[21] the reality of the toxic effects associated with the persistence of PCBs in the natural environment grew increasingly evident. Monsanto received reports of significant fish kills in waterways adjacent to its manufacturing plants. A 1968 study of Snow Creek, a waterway adjacent to Monsanto's Anniston plant, characterized the creek as "a potential source of future legal problems":[22]

> Snow Creek is a potential source of future legal problems. The stream does not support life and contains many materials that accumulate in water, fish, and muds downstream. Although there is no evidence that these materials are harmful to fish, their presence constitutes damaging evidence of pollution. The argument that these compounds impart undesirable palatability qualities to Choccolocco Creek fish would be very convincing and probably easy to prove.

68. In December 1968, Richard Risebrough, a researcher at the Institute of Marine Resources and the University of California-Berkeley, published a report entitled *Chlorinated Hydrocarbons in Marine Ecosystems*, which identified chlorinated hydrocarbons generally as "the most abundant synthetic pollutants present in the global environment." The article reported significant concentrations of PCBs in the bodies and eggs of peregrine falcons and thirty-four other bird

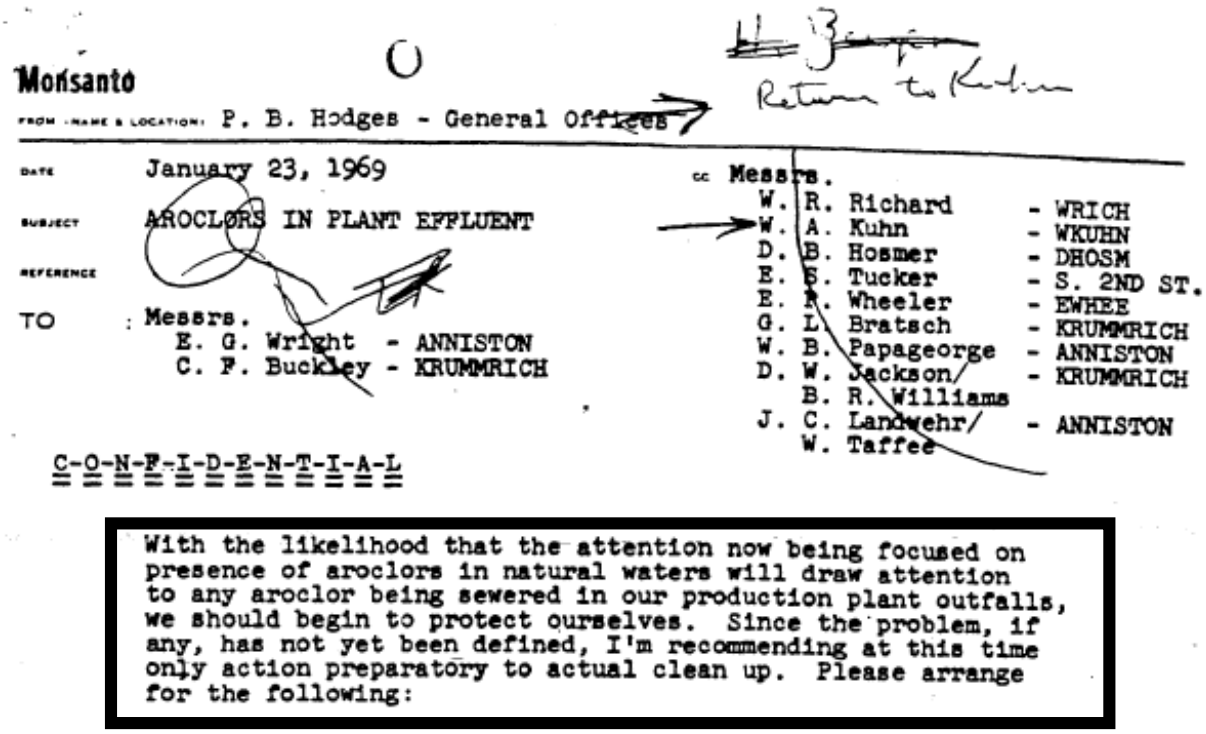
[21] Memorandum from R. Emmet Kelly to D. Wood on Response to Aroclor Reports (Feb. 10, 1967) ("We are very worried about what is liable to happen in the states when the various technical and lay news media pick up the subject. This is especially critical at this time because air pollution is getting a tremendous amount of publicity in the United States.").

[22] Monsanto Chemical Company, Investigations of Certain Pesticide-Wildlife Relationships in the Choccolocco Creek Drainage: A Contract Between the Monsanto Chemical Company and Mississippi State University (Sept. 1, 1966-Aug. 31, 1967).

species. The report linked PCBs to the rapid decline in peregrine falcon populations in the United States. Internally, Monsanto employees acknowledged that "Risebrough has found PCBs along with chlorinated pesticides in a number of species of fish and birds along the California coast as well as in waters off Baja California and Central America."[23]

69. By January of the following year, Monsanto employees recognized the need to respond, if only internally. In a memo dated January 23, 1969, and designated as "C-O-N-F-I-D-E-N-T-I-A-L," Monsanto's Paul Hodges, an official in its St. Louis General Offices, noted the need for Monsanto to begin to "protect" itself:

[23] Memorandum from Elmer P. Wheeler to W.H. Richard on Polychlorinated Biphenyls in the Environment (Oct. 21, 1968).



Monsanto

FROM - NAME & LOCATION: P. B. Hodges - General Offices

Return to Kuhn

DATE: January 23, 1969

SUBJECT: AROCLORS IN PLANT EFFLUENT

REFERENCE:

TO: Messrs.
E. G. Wright - ANNISTON
C. F. Buckley - KRUMMRICH

cc Messrs.
W. R. Richard - WRICH
W. A. Kuhn - WKUHN
D. B. Hosmer - DHOSM
E. S. Tucker - S. 2ND ST.
E. A. Wheeler - EWHEE
G. L. Bratsch - KRUMMRICH
W. B. Papageorge - ANNISTON
D. W. Jackson - KRUMMRICH
B. R. Williams
J. C. Landwehr - ANNISTON
W. Taffee

C-O-N-F-I-D-E-N-T-I-A-L

With the likelihood that the attention now being focused on presence of aroclors in natural waters will draw attention to any aroclor being sewered in our production plant outfalls, we should begin to protect ourselves. Since the problem, if any, has not yet been defined, I'm recommending at this time only action preparatory to actual clean up. Please arrange for the following:

70. Monsanto therefore formed an "Aroclor Ad Hoc Committee," and tasked that committee with preparing recommendations for actions that Monsanto could take to improve its reputation and salvage its bottom line, notwithstanding the now publicly known damage resulting worldwide from PCBs. The committee's charge was to develop a plan that would:

a) Permit continued sales and profits of Aroclors and Terphenyls.

b) Permit continued development of uses and sales.

c) Protect [the] image of Organic Division and of the Corporation.[24]

71. Monsanto's Aroclor Ad Hoc Committee first met on September 5, 1969. At that meeting, the committee acknowledged that PCBs had been found in

[24] Confidential Minutes of Aroclor "Ad Hoc" Committee First Meeting (Sept. 5, 1969).

fish, oysters, shrimp, birds, and in and "[a]long coastlines of industrialized areas such as Great Britain, Sweden, Rhine River, low countries, Lake Michigan, Pensacola Bay, and in Western wild life." The committee was aware that PCBs "may be a global contaminant." Moreover, the committee knew that ordinary usage of Monsanto's own PCB-containing materials was a cause of the environmental problem:

> Environmental Contamination by Customers:
>
> Our in-plant problems are very small vs. problems of dealing with environmental contamination by customers. In one application alone (highway paints), one million lbs/year are used. Through abrasion and leaching *we can assume that nearly all of this Aroclor winds up in the environment.*

(Emphasis added.)

72. The Aroclor Ad Hoc Committee issued a confidential report on October 2, 1969. In that report, the Committee explained its overall findings:

> The committee believes there is little probability that any action that can be taken will prevent the growing incrimination of specific polychlorinated biphenyls (the higher chlorinated—e.g. Aroclors 1254 and 1260) as nearly global environmental contaminants leading to contamination of human food (particularly fish), the killing of some marine species (shrimp), and the possible extinction of several species of fish eating birds.
>
> Secondly, the committee believes that there is no practical course of action that can so effectively police the uses of these products as to prevent environmental contamination. There are, however, a number of actions which must be undertaken to prolong the manufacture, sale and use of these particular Aroclors as well as to protect the continued use of other members of the Aroclor series.

(Emphasis added.)

73. On September 9, 1969, Monsanto employee W.R. Richard, who was a member of the Aroclor Ad Hoc Committee, wrote an interoffice memorandum entitled "Defense of Aroclor," in which he acknowledged that "[w]ater [p]ollution seems to be [the] first issue" with Aroclor: "Aroclor product is refractive, will settle out on solids—sewerage sludge—river bottoms, and apparently has a long life." He noted that Aroclors 1254 and 1260 had been found in shrimp along Florida's Gulf Coast; in the San Francisco Bay, where it was reported to thin eggshells in birds; and in the Great Lakes. Richard also acknowledged that the company could not defend itself entirely:

> We can't defend vs. everything. Some animals or fish or insects will be harmed. Aroclor degradation rate will be slow. Tough to defend against. Higher chlorination compounds will be worse [than] lower chlorine compounds. Therefore we will have to restrict uses and clean-up as much as we can, starting immediately.

74. On January 29, 1970, Wheeler, Monsanto's Manager of Environmental Health, circulated laboratory reports discussing results of animal studies. He noted,

> Our interpretation is that the PCB's are exhibiting a greater degree of toxicity in this chronic study than we had anticipated. Secondly, although there are variations depending on species of animals, the PCB's are about the same as DDT in mammals.

75. Rather than take steps to correct the impact that Monsanto's poisonous materials were likely to have on the natural environment, Monsanto

opted instead to take steps that would continue to improve Monsanto's reputation and bottom line. Although Wheeler recognized that ignoring the environmental havoc that the PCBs would wreak worldwide was "unacceptable from a legal, moral, and customer public relations and company policy viewpoint," he ultimately concluded that Monsanto's profits were more important: "[T]here is too much customer/market need and selfishly too much Monsanto profit to go out" to take any action to the contrary.

76. In an interoffice memorandum circulated on February 16, 1970, and entitled "Pollution Letter," Monsanto provided talking points for its employees when discussing the dangers of PCBs with inquiring customers: "We (your customer and Monsanto) are not interested in using a product which may present a problem to our environment." But the memorandum also acknowledged that Monsanto "will continue to make" PCBs; "[w]e can't afford to lose one dollar of business," and admonished employees not to take any product back:

> "We want to avoid any situation where a customer wants to return fluid. . . . We would prefer that the customer use up his current inventory and purchase [new fluids] when available. He will then top off with the new fluid and eventually all Aroclor 1254 and 1260 will be out of his system. <u>We don't want to take fluid back</u>." (Emphasis in original.)

77. In 1970, the year after Monsanto formed the Aroclor Ad Hoc Committee, and despite Monsanto's knowledge of the global nature of PCB

contamination, PCB production in the United States peaked at eighty-five million pounds.

78. Growing awareness of the ubiquity of PCBs led the U.S. Government to conduct an investigation of PCBs' health and environmental effects and any resulting contamination of food and other products. In May 1972, an interdepartmental government task force published a report confirming that PCBs were highly persistent, could bioaccumulate to relatively high levels, and could have serious adverse effects on human health.[25]

79. After that report, environmental sampling and studies suggested that PCBs were a "more serious and continuing environmental and health threat than had been originally realized."[26] To address these concerns, EPA undertook a study to assess PCB levels in the environment on a nationwide basis. That study revealed widespread occurrence of PCBs in bottom sediments in several states; in fish and birds; in lakes and rivers; in the Atlantic Ocean, the Pacific Ocean, and the Gulf of Mexico; in sewage treatment facilities; in a variety of foods, including milk, poultry, eggs, fish, meat, and grains; and in human milk, blood, hair, and tissues.

[25] Participating agencies included, among others, EPA and the Departments of Agriculture; Commerce; Health, Education, and Welfare; and the Interior. *See generally* Interdepartmental Task Force on PCBs, *Polychlorinated Biphenyls and the Environment* (May 1972).

[26] United States Environmental Protection Agency Office of Toxic Substances, *Review of PCB Levels in the Environment*, at 1 (Jan. 1976).

80. At the same time, Monsanto continued to promote the use and sale of Aroclor and other PCB compounds. In a 1960 brochure, Monsanto promoted the use of Aroclors in transformers and capacitors, utility transmission lines, home appliances, electric motors, fluorescent light ballasts, wire and cable coatings, impregnants for insulation, dielectric sealants, chemical processing vessels, food cookers, potato chip fryers, drying ovens, thermostats, furnaces, and vacuum diffusion pumps. According to the brochure, Aroclors also could be used as a component of any of the following: automotive transmission and industrial cutting oils; insecticides; natural waxes used in dental casting, aircraft parts, and jewelry; abrasives; specialized lubricants; adhesives; moisture-proof, tack, masonry, and other coatings; printing inks; papers; mastics; sealant; caulking compounds; plasticizers; resin; paints, varnishes, and lacquers; railway tank and gondola cars; and wood and metal maritime equipment.

81. A 1961 company brochure explained that Monsanto's Aroclors were being used in a wide variety of common household items, including in "lacquers for women's shoes"; as "a wax for the flame proofing of Christmas trees"; as floor wax; as an adhesive for bookbinding, leather, and shoes; and as invisible marking ink used to make chenille rugs and spreads.

82. During the entirety of the 1960s, and probably before, Monsanto knew that its Aroclors were being used in a variety of industrial, commercial, household,

and consumer goods. Indeed, Monsanto encouraged these uses by affirmatively urging its salesmen to market Aroclor-containing products for these and other applications.

83. A few years later, in 1970, Monsanto tried to distance itself from the variety of applications of Aroclors that it proudly espoused a few years earlier. In a press release, the company claimed, "What should be emphasized . . . is that PCB was developed over 40 years ago primarily for use as a coolant in electrical transformers and capacitors. It is also used in commercial heating and cooling systems. It is not a 'household' item." Yet, in 1970, Monsanto was still marketing and selling Aroclor as a compound for use in common household items.

F. Monsanto Concealed the Harmful Effects of PCBs From Consumers and Government Entities.

84. While the scientific community and Monsanto knew that PCBs were toxic and becoming a global contaminant, Monsanto repeatedly misrepresented those facts, telling consumers, the public, and government entities the exact opposite—that the compounds were not toxic and that the company would not expect to find PCBs in the environment in a widespread manner.

85. For example, in a March 24, 1969, letter to Los Angeles County Air Pollution Control District, Monsanto advised that the Aroclor compounds "are not particularly toxic by oral ingestion or skin absorption." Addressing reports of PCBs found along the West Coast, Monsanto claimed ignorance as to their origin,

explaining that "very little [Aroclor] would normally be expected either in the air or in the liquid discharges from a using industry." A similar Monsanto letter to the Regional Water Quality Control Board explained that PCBs are associated with "no special health problems" and "no problems associated with the environment."

86. In May 1969, Wheeler spoke with a representative of the National Air Pollution Control Administration, who promised to relay to Congress the message that Monsanto "cannot conceive how the PCBs can be getting into the environment in a widespread fashion." This is the same Wheeler who, only seven months later, circulated internally to Monsanto executives laboratory reports showing that PCBs were as toxic as DDT in mammals.

87. Monsanto delivered the same message to the New Jersey Department of Conservation in July 1969, claiming first that, "[b]ased on available data, manufacturing and use experience, we do not believe the PCBs to be seriously toxic." The letter then reiterated Monsanto's position regarding environmental contamination: "We are unable at this time to conceive of how the PCBs can become widespread in the environment. It is certain that no applications to our knowledge have been made where the PCBs would be broadcast in the same fashion as the chlorinated hydrocarbon pesticides have been."

G. Land, Waters, and Natural Resources Owned or Held in Trust by the State of Delaware Have Been Impaired by PCB Contamination.

88. The State of Delaware owns or holds in trust for the benefit of the public the waters of all navigable or tidally influenced rivers and waterways within the State, as well as land and natural resources including fish and wildlife. The remaining surface and groundwater, from all sources of supply and prior to capture, is also held in trust by the State for the benefit of the public. The State, as trustee, holds title to such waters subject to the public's right to use the water for various beneficial purposes. The Division of Fish & Wildlife within the Department of Natural Resources and Environmental Control ("DNREC") conserves and manages Delaware's fish and wildlife and their habitats, and provides fishing, hunting, wildlife viewing and boating access on nearly 65,000 acres of public land. In addition to providing habitat for a variety of wildlife, these lands provide hunting and other outdoor recreational opportunities. The Division of Parks and Recreation oversees more than 20,000 acres in sixteen state parks, manages state nature preserves, and monitors conservation easements protecting more than 4,000 acres of land.

89. In its capacity as trustee of all natural resources situated within its borders, the State has the authority to protect and preserve, for the benefit of the public, those natural resources, including public waters, from impairment and harm.

90. Pursuant to its authority under state law, the State has investigated, monitored, and detected the presence of PCBs on its lands, in its waters, and in various wildlife species and other public trust resources within its borders.

91. Delaware watersheds that have been identified as impaired due to the presence of PCBs include, but are not limited to, the following:

a. *Shellpot Creek Watershed* – Lower Shellpot Creek, Upper Shellpot Creek;
b. *Brandywine Creek Watershed* – Lower Brandywine, Upper Brandywine;
c. *Red Clay Creek Watershed* – Mainstem;
d. *White Clay Creek Watershed* – Mainstem;
e. *Christina River Watershed* – Lower Christina River, Mid Christina River, Lower Christina Creek, Little Mill Creek and Willow Run, Smalleys Pond;
f. *Army Creek Watershed* – Lower Army Creek, Upper Army Creek;
g. *Red Lion Creek Watershed* – Lower Red Lion, Upper Red Lion;
h. *Chesapeake & Delaware Canal Watershed* – C&D Canal;
i. *Appoquinimink River Watershed* – Lower Appoquinimink River, Upper Appoquinimink River, Drawyer Creek;
j. *Saint Jones River Watershed* – Lower Saint Jones, Upper Saint Jones, Isaac Branch, Moores Lake, Silver Lake (at Dover);
k. *Cedar Creek Watershed* – Slaughter Creek;
l. *Delaware River* – DRBC Zone 5; and
m. *Delaware Bay* – DRBC Zone 6.

92. Although PCBs adversely affect waterways throughout Delaware, they have had a particularly significant impact on the three areas discussed below: the Delaware River, the Delaware Bay, and the Christina River Basin.

Delaware River

93. Beginning in New York's Catskill Mountains and running for over 330 undammed miles, the Delaware River is the longest free-flowing river in the eastern United States. It flows through four U.S. states before emptying into the Delaware Bay. The Delaware River basin provides drinking water for approximately fifteen million people. It also sustains fishing, transportation, power, cooling, recreation, and other industrial and residential purposes, supporting over $25 billion in annual economic activity. The Delaware River basin is home to mink, muskrat, beavers, white-tailed deer, wild turkeys, owls, bobcats, otters and hundreds of avian species. It supports diadromous fish species including striped bass (rockfish), American shad, American eel, river herring, and Atlantic sturgeon. The Delaware River is one of the main producer areas for striped bass along the Atlantic Coast. Recreational fishing in the Delaware River is a part of life for many Delawareans, for a variety of fish species, including striped bass, white perch, largemouth bass, and channel catfish. Both recreational and commercial fishing in the Delaware River are of major economic significance to Delaware. Statewide, the fishing industry provides over $60 million to Delaware's economy annually.

94. Below Trenton, New Jersey, the Delaware River is tidal, and this lower half of the watershed, including the Delaware Bay, comprises the Delaware

Estuary, which provides critical spawning and feeding grounds and nursery areas for many species.

95. The water quality criteria for the Delaware River are set by a federal-interstate agency called the Delaware River Basin Commission ("DRBC"). In addition to Delaware, the DRBC member states are New Jersey, Pennsylvania, and New York; the U.S. Army Corps of Engineers is the federal representative. Each member state contributes to DRBC funding, and the State of Delaware, through DNREC, is an active member of the DRBC. For purposes of monitoring water quality criteria, the Delaware River is divided into six zones. The lower portion of the Delaware River—from the Delaware-Pennsylvania state line to Liston Point, which marks the beginning of the Delaware Bay—is Zone 5.

96. The Delaware River is significantly impaired by the presence of PCBs. In 1996, based on elevated levels of PCBs in tissue samples from fish caught in Zone 5 and failure to attain the designated use of fishable waters, Delaware listed Zone 5 of the Delaware River as impaired by PCBs under Section 303(d) of the Clean Water Act.

97. Zone 5 of the Delaware River has had a total maximum daily load ("TMDL") standard in place for PCBs since 2003.

98. In 2013, the DRBC adopted the current water quality criterion of sixteen picograms/liter for PCBs in the Delaware River and Bay for the protection of human health from carcinogenic effects.

Delaware Bay

99. Forming part of the New Jersey-Delaware state border, the Delaware Bay extends southeast for fifty-two miles. The Bay serves as an important link in the Atlantic Intracoastal Waterway, supports the world's largest freshwater port system, and opens to the Atlantic Ocean.

100. Including mud flats, salt marshes, and wetlands, the Bay mixes with Atlantic Ocean salt water in its 2,030 square kilometer area. Like the Delaware River, the Delaware Bay serves as a fishing, hunting, and boating destination.

101. The Delaware Bay is a critical stopover for migratory birds on the Atlantic flyway, including red knots, sanderlings, sandpipers, and plovers, and is one of only four estuaries in North America where over one million shorebirds congregate during migration. In the spring, birds migrating from South America to the Arctic will stop in the Delaware Bay, some after having flown nonstop as far as 5,000 miles, to feast on horseshoe crab eggs. When horseshoe crab eggs are in abundance, the birds can double their weight in less than two weeks and then fly on to their summer breeding grounds in the Arctic. The Delaware Bay ecosystem is of vital significance not only to the region but also on a global level.

102. The area from Liston Point to the mouth of the Delaware Bay is designated Zone 6 by the DRBC.

103. Delaware listed Zone 6 as impaired under Section 303(d) of the Clean Water Act for PCBs in 1996. A TMDL for PCBs in Zone 6 has been in place since 2006. When the TMDL was established in 2006, the PCB concentration in the Atlantic Ocean water touching the estuary exceeded the water quality criterion for Delaware Bay by one to two orders of magnitude.

104. The State has issued fish consumption advisories due to PCBs for fish caught in the Delaware Bay, including striped bass, white perch, and larger bluefish. The advisories for striped bass and bluefish also extend to Delaware's Atlantic Coastal Waters. In addition to fish species, PCBs have been found in oysters and mussels in the Delaware Bay.[27]

Christina River Basin

105. The Christina River Basin, in the northern part of the State, is within the Delaware River Basin and itself is comprised of four watersheds: White Clay Creek, Red Clay Creek, Brandywine Creek, and the Christina River. The Christina River Basin is home to over forty percent of Delaware's human population, as well as to threatened species such as the cerulean warbler and the long-tailed

[27] K.L. Kimbrough, W. E. Johnson, G. G. Lauenstein, J. D. Christensen and D. A. Apeti. *An Assessment of Two Decades of Contaminant Monitoring in the Nation's Coastal Zone*, National Oceanic and Atmospheric Administration Technical Memorandum 69 (2008).

salamander. The White Clay Creek has been designated Wild & Scenic under the National Wild & Scenic Rivers System and is the first river nationally to be protected in its entirety—designated on a watershed basis rather than on a river-segment basis.

106. The Christina River Basin also contains Delaware's only seven trout streams, which the Division of Fish & Wildlife stocks with trout annually. The Red Clay Creek has only recently been returned to its status as a trout-stocking stream after many years of remediation and restoration work. Delaware was forced to curtail trout stocking in Red Clay Creek due to contamination from multiple chemicals, including PCBs.

107. Fishing in the Christina River Basin is also popular for a number of other species. In downtown Wilmington, for example, where the tidal and non-tidal sections of Brandywine Creek meet, people fish for shad, white perch, yellow perch, among other fish, and where the Christina River winds around South Wilmington, people fish for striped bass and catfish. Just south of where the Christina River, White Clay Creek, and Red Clay Creek intersect, striped bass will sometimes chase schooling shad.

108. All four watersheds within the Christina River Basin are impaired by PCBs. Delaware has prominently posted warnings informing people it is unsafe to eat fish from these waters along 82.2 stream miles due to PCB-contaminated

sediment and high PCB levels in fish tissue. As a result, many anglers in the Christina River Basin do not eat the fish they catch. However, there are also many communities in the State that rely on fishing for sustenance. For those who have no choice but to eat their catch, the health risks are significant. State and regional officials have warned that regular, lifetime consumption of catfish from the lower Christina and Brandywine can increase additional lifetime cancer risks to 1-in-1,000, one hundred times greater than the 1-in-100,000 risk threshold that regulators often use to prompt remedial action on carcinogens.

109. The Christina River Basin contains numerous sites that have contributed to PCB contamination, including, but not limited to, three Amtrak rail facilities in Wilmington, American Scrap and Waste, the Kreiger Sites & Marsh in South Wilmington, former Carney Harris, the Dravo Shipyard, American Tank & Trailer Cleaning, Purina Tower B, and Electric Hose & Rubber. DNREC has invested substantial resources in remediation efforts for these and other sites.

Contaminated Sites

110. Delaware has also had to pay cleanup costs for a variety of PCB-contaminated sites. These include "orphan sites" as well as sites with a mixed-funding settlement. Orphan sites are properties not owned by the State that have been contaminated by a release of hazardous substances posing serious threats to human health or the environment, and for which no responsible party is currently

known or able to pay remediation costs. Orphan sites also include sites that for other reasons called for DNREC to take action before identifying a responsible party. Delaware law permits DNREC to undertake any removal or remedial actions necessary to protect public health, safety, welfare, and the environment, and authorizes the State, by and through DNREC, to take any action necessary to conduct such removal or remedial actions and to carry out the policies and provisions of Delaware's environmental laws. DNREC also dedicates resources to oversight, investigation, and monitoring of sites, including sites contaminated by PCBs, through its Voluntary Cleanup Program.

Harvey & Knott Drum, Inc.

111. The Harvey & Knott Drum, Inc., site in Kirkwood, Delaware, is an example of a PCB-contaminated Superfund site whose cleanup was undertaken at State expense. This twenty-five-acre site was operated as an open dump and eventually abandoned, leaving behind hundreds of drums piled on the surface, many of which contained PCB sludges, causing visibly discolored soil and stressed vegetation. The operators of the dump had reportedly dumped liquid hazardous waste in trenches and on the ground, and the groundwater was contaminated. Residents in the surrounding area, which was densely populated, used private, shallow wells for drinking water. The State funded a portion of the investigation of the site, conducted extensive sampling on-site, and tested private wells.

Amtrak Rail Yards

112. The Amtrak Rail yards in Wilmington—the Refueling Yard, the Maintenance Facility, and West Yard—collectively comprise the largest chronic source of PCB loading to the Delaware River in the State. The historic Wilmington yards have long served as a regional hub for rail operations and continue to serve as the primary facility for the maintenance, repair, and overhaul of electric locomotives used on the Northeast Corridor. For decades, the transformers on these trains contained Monsanto's PCBs, and the exposed soil at the Amtrak yards is heavily contaminated with PCBs. PCB concentrations in the soil in and around the rail complex vary, with some soils containing over 100 times the threshold for investigation and potential remediation and other areas over 3,000 times higher. Although the State has been working with Amtrak for years through the Voluntary Cleanup Program to remediate the area, PCBs in the soil and track ballast remain a significant source of contamination for the Delaware River.

CitiSteel / Former EVRAZ Claymont Steel

113. The CitiSteel site consists of approximately 420 acres on the Delaware River in New Castle County and includes Naamans Creek. The site was used for steel production, particularly specialty plate steel from scrap metal, and continued to serve as an active scrap metal site after steel production ceased in 2013. DNREC has performed investigation on the site and overseen remedial

investigation by the owner of the site. PCBs were detected in surface and subsurface soils in the area as well as surface water and sediment in the site stormwater and cooling water settlement features.

Governor Bacon Health Center / Fort DuPont State Park

114. Governor Bacon Health Center, a State-operated multi-purpose health care facility, and the adjacent Fort DuPont State Park are located on the grounds of a former military base dating back to the Civil War, which was sold to the State in 1947. Near the health center and the state park is a former landfill in which PCB-containing materials were deposited. Both state and federal agencies have undertaken cleanup, with the EPA removing PCB-contaminated soil from the area and DNREC performing treatment to eliminate hazardous runoff from the site.

Other State-Owned Lands and Public Trust Resources

115. In addition to the sites described above, various other properties throughout the State, including State-owned lands, have been affected by the presence of PCBs.

116. Additionally, PCBs have been detected in the tissues of various fish and wildlife species throughout Delaware, including bottlenose dolphins in the Delaware Bay.[28]

[28] Magali Houde, et al., *Polychlorinated Biphenyls and Hydroxylated Polychlorinated Biphenyls in Plasma of Bottlenose Dolphins (Tursiops truncatus) from the Western Atlantic and the Gulf of Mexico*, 40 Environ. Sci. Technol. 5860 (Aug. 22, 2006).

117. DNREC analyzes fish samples for toxins and coordinates fish consumption advisories statewide with the Delaware Department of Health and Social Services' Division of Public Health ("DHSS/DPH"). Since 2007, Delaware has had in place a general statewide fish consumption advisory, recommending that no one consume more than one eight-ounce meal per week of any fish species caught in Delaware's fresh, estuarine, or marine waters. PCBs are the primary risk driver for most of the fish consumption advisories issued by DNREC and DHSS/DPH.

118. Delaware has had to advise its citizens to severely restrict consumption of fish due to the persistent presence of PCBs. The level of PCB contamination has been so high for many Delaware waters that the recommended advisory has been absolute—no consumption of any fin fish. Recently, as a result of the State's sustained PCB remediation efforts, DNREC and DHSS/DPH have been able to ease the consumption advisories, but they are still restrictive. For example, the recommended consumption of any fin fish caught in the tidal White Clay Creek and portions of the tidal Christina River is no more than one eight-ounce meal per year. In larger water bodies with the benefit of greater mixing from the ocean, such as the lower part of the Delaware River and the Delaware Bay, the advisories, while not as severe, are still strict. For many years, the State recommended consumption of no more than a single eight-ounce meal per year of

striped bass, channel catfish, white catfish, white perch, or eel caught in those waters due to the presence of PCBs. Recent consumption advisories for the lower Delaware River and Delaware have improved, but PCBs remain the primary contaminant of concern with respect to consumption of striped bass, white perch, and bluefish.

119. Because PCBs are persistent pollutants, unless the State or some other entity takes affirmative actions to remove PCBs from the environment, PCBs will continue to bioaccumulate in the fish species described above. And, when another predator—e.g., an eagle or other bird, dolphin, or human—eats any of the fish species in the Delaware watersheds listed above, the concentration of PCBs will move up the food chain. The PCBs will remain in the predators' fatty tissues and may cause significant adverse effects to their health and to their surrounding environment.

120. Although PCBs don't break down naturally, the State of Delaware has been on the cutting edge of attempting to develop solutions. The improvements in consumption advisories described above are largely the result of declining PCB concentrations in fish. Tidal areas of the Christina and Brandywine Rivers and Shellpot Creek, historically some of the most contaminated areas in the State, have shown decreases of PCB concentrations in the last several years due to several efforts by the State and its partners, including state-of-the-science testing to

identify, prioritize, and control remaining sources of contaminants. The State has worked to develop innovative clean-up strategies, including deploying PCB-destroying microorganisms and adding activated carbon and quicklime to sediments that bind contaminants and limit their transfer to the water and fish. Through testing in small water bodies, these strategies have demonstrated promising results. Although time-consuming and costly, these remedial processes have shown that, if properly funded, Delaware can undo the astonishing harms of Monsanto's greed.

V. CLAIMS FOR RELIEF

FIRST CLAIM FOR RELIEF
(Public Nuisance)

121. The State incorporates by reference the allegations in the above paragraphs as if fully set forth herein.

122. The Attorney General is authorized to bring suit on behalf of the State and its citizens to address a public nuisance.

123. Defendants' production and use of PCBs in the various chemical and industrial applications described above contributed to the continuous presence of PCBs on lands and in waters owned, controlled, managed, or held in trust by the State.

124. The continuous presence of PCBs on lands and in waters that the State owns or holds in trust for the benefit of the public presents ongoing risks to the

health of humans, fish, wildlife, and the environment in the State of Delaware and constitutes an unreasonable interference with rights common to the general public.

125. The continuous presence of PCBs on lands and in rivers, waterways, and lakes that the State owns or holds in trust for the benefit of the public substantially, continuously, and unreasonably interferes with interests and rights of the general public to be free from injury to public health, safety, and welfare. It further interferes with the interests of the general public in the preservation of Delaware's natural resources—including fish, wildlife, and habitat—which the State is obligated to hold in trust for the benefit of, and for use by, members of the general public. As alleged above, Delaware has also incurred significant costs in abating the nuisance caused by Defendants.

126. As early as 1937, Defendants knew, should have known, or were reckless in not knowing that once Monsanto's PCBs were released into the environment, such interferences with the interests of the general public were substantially certain to occur.

127. Defendants' internal communications about the toxic and persistent properties of PCBs make clear that Defendants understood that, once PCBs were released into the environment, it was highly probable that the PCBs would remain in the environment and present serious risks to the health of humans, wildlife, and the environment. Defendants continued, however, to manufacture and supply

PCBs while knowing that, through their ordinary use, they would be released into the environment, and while consistently downplaying the risks of PCBs in communications with their customers and the general public.

128. By way of their decisions to manufacture and supply PCBs while knowing their PCBs would be released into the environment on a widespread basis and without informing the general public of the risks that PCBs presented to the health of humans, fish, wildlife, and the environment, Defendants engaged in ultrahazardous conduct and acted in a manner that was consciously indifferent to the health, safety, and welfare of the general public and the natural environment.

129. As a direct and proximate result of the nuisance, Delaware citizens have been injured in their ability to enjoy rights common to the general public.

130. As a direct and proximate result of the nuisance, Delaware has sustained economic harm by spending substantial sums addressing the toxic legacy of PCBs throughout the State.

131. The State has also suffered unique harms of a kind that are different from Delaware citizens at large, namely, that the State has been harmed in its proprietary interests.

SECOND CLAIM FOR RELIEF
(Trespass)

132. The State incorporates by reference the allegations in the above paragraphs as if fully set forth herein.

133. Defendants' production and use of PCBs in the various chemical and industrial applications described above has resulted in the continuous presence of PCBs on lands, in waters, and in other public trust resources that the State owns, possesses, controls, maintains, or holds in trust for the benefit of the public.

134. The presence of PCBs on or in waters, land, and other public trust resources of the State interferes with the State's interest in the exclusive possession of that property and thereby constitutes a trespass. Defendants' conduct allowed or caused that interference to occur. Their conduct was and is negligent, reckless, intentional, and/or abnormally dangerous. Defendants had no license or other authorization to enter onto or leave contaminants on property that the State possesses. Any compliance by Defendants with applicable laws or permit conditions does not excuse Defendants' interference.

135. As early as 1937, Defendants knew that once the PCBs that it produced were released into the environment, they were likely to remain in, and be transported throughout, the environment on a widespread basis. Thus, as early as 1937, Defendants knew, should have known, or were reckless in not knowing, that Defendants' decision to continue to release PCBs into the environment would likely result in interferences with the interests that the State has in the exclusive possession of its property.

136. The interference that Defendants' conduct has caused with the State's exclusive possession of property that the State owns, possesses, controls, or holds in trust for the benefit of the public is a continuing interference that, since at least the 1960s, Defendants have known of or have allowed to persist.

137. By way of their decisions to release PCBs into the environment on a widespread basis without informing the general public of the risks that PCBs present to the health of humans, fish, wildlife, and the environment, Defendants engaged in ultrahazardous conduct.

THIRD CLAIM FOR RELIEF
(Unjust Enrichment)

138. The State incorporates by reference the allegations in the above paragraphs as if fully set forth herein.

139. Under the laws of Delaware, Defendants owe a duty to the State and to the public to prevent Monsanto's PCBs from interfering with the use and/or possession of property Defendants do not own, and from causing harm to human health and the environment.

140. Defendants' production and use of PCBs in various chemical and industrial applications, as described above, have resulted in the presence of PCBs in lands and waters across Delaware.

141. Defendants were and are legally obligated to prevent PCB contamination that now exists in Delaware. For example, and without limitation,

Defendants had and continue to have a common law obligation to prevent their PCBs from creating a public nuisance and from trespassing on others' property.

142. Because of the significant risk PCBs present to human health and the environment, the State has undertaken remedial actions to monitor, investigate, and remove the PCBs in contaminated areas, to abate continuing hazards that PCBs pose to public health, safety, welfare, and the environment, and to mitigate the damage that Defendants' PCBs have caused to the natural environment. Delaware has not undertaken these actions because of a contractual relationship with Defendants.

143. As a result, the State has incurred significant investigation, monitoring, and remedial action costs. Based on information gathered through toxic monitoring and investigation, the State anticipates that it will incur additional remedial action and other costs to continue monitoring, investigating, and abating hazards to public health, safety, welfare, and the environment, from Defendants' PCBs.

144. Defendants have been unjustly enriched by being relieved of their duties relating to remediation or environmental monitoring to the extent that those duties have been or will be performed by the State.

145. The State has been impoverished by undertaking remedial actions necessary to abate the hazard created by Defendants' PCBs, certain economic

enrichments, including but not limited to the following, have been conferred upon or acquired by Defendants:

A. Reduction in the costs Defendants would have incurred, or in the future will incur, to monitor and investigate the existence of damages caused by the presence of PCBs in Delaware's natural environment;

B. Reduction in the costs that Defendants would have incurred, or in the future will incur, to remediate the damages caused by the presence of PCBs in the natural environment, including damages to Delaware's lands, waters, fish, wildlife, and habitat areas; and

C. Other and further economic benefits relating to the existence of Monsanto's PCBs in Delaware's natural environment, the retention of which by Monsanto would be unjust.

146. As a result of the State's efforts and funding to remediate Defendants' PCB contamination within the State, the State seeks restitution to prevent Defendants from being unjustly enriched by their retaining the economic benefits described above. The State does not have a business justification for providing the Defendants with PCB remediation; Defendants receive all the benefits of the State's remediation while the State receives nothing in return.

147. Given its duty and otherwise legally enforceable obligation to prevent its PCBs from interfering with the use and/or possession of property it does not

own and from causing harm to human health and the environment, Defendants' retention of the benefits described above, without compensation therefor, would be unjust.

148. As a result, and to prevent Defendants from being unjustly enriched by their retaining the economic benefits described above, while the State is unjustly impoverished, the State seeks restitution.

VI. PRAYER FOR RELIEF

WHEREFORE, Plaintiff, the State of Delaware, prays that this Court enter judgment in its favor against Defendants and:

1. On Count I (Public Nuisance),

A. Order Defendants to pay the expenses the State of Delaware has incurred or will incur in the future to abate fully the nuisance they have caused;

B. Award the State of Delaware punitive damages; and

C. Order such further relief as the Court may deem proper.

2. On Count II (Trespass),

A. Award Delaware compensatory damages for the damages caused by Defendants' continuing trespass upon State lands and the costs of removing Defendants' PCBs from State lands;

B. Award Delaware punitive damages; and

C. Order such further relief as the Court may deem proper.

3. On Count III (Unjust Enrichment),

A. Award Delaware restitution of its costs caused by Defendants' actions, including investigation, remediation, and monitoring costs paid for by the State; and

B. Order such further relief as the Court may deem proper.

VII. JURY DEMAND

Delaware respectfully requests that all issues presented by its above Complaint be tried by a jury with the exception of those issues that, by law, must be tried before the Court.

Dated: September 22, 2021.

STATE OF DELAWARE
DEPARTMENT OF JUSTICE

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