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I. INTRODUCTION

1. The State of Ohio, by its Attorney General Michael DeWine (“Plaintiff” or “Ohio” or the “State”), brings this action against Defendants Monsanto Company (“Monsanto”), Solutia, Inc. (“Solutia”), and Pharmacia LLC (“Pharmacia”) (collectively, “Defendants”), for damages to Ohio, including compensatory and punitive damages, recoverable at law or in equity, and for declaratory and injunctive relief, to remedy Defendants’ violations of law.

2. Polychlorinated biphenyls (“PCBs”) are synthetic organic chemical compounds that were manufactured, marketed, sold, and distributed by Defendants in the United States from 1929 to 1977. During that period, Defendants were responsible for the manufacture of 99% or more of all PCBs used within the United States. There are no known natural sources of PCBs in the environment.

3. Production and, with limited exceptions, use of PCBs was prohibited in the United States in 1979, when the U.S. Environmental Protection Agency (“EPA”) promulgated final regulations banning PCBs under the Toxic Substances Control Act (“TSCA”), enacted by the U.S. Congress in 1976.

4. PCB production was banned under international law in 2004, when the Stockholm Convention on Persistent Organic Pollutants came into force.

5. Numerous governmental and intergovernmental agencies recognize PCBs as probable or confirmed human carcinogens. In particular, the U.S. EPA recognizes PCBs

as probable human carcinogens, and the U.S. Department of Health and Human Services' National Toxicology Program ("NTP") considers PCBs to be "reasonably anticipated" carcinogens. The International Agency for Research on Cancer ("IARC") classifies PCBs as known human carcinogens.

6. Human exposure to PCBs is associated with cancer as well as adverse health effects on the endocrinal, nervous, immune, reproductive, neuropsychological, and other biological systems, even at very low levels of exposure. Fish, birds, and mammals that consume PCBs or PCB-contaminated water or food also suffer adverse health effects. PCBs have been detected in high concentrations in Ohio waters and soils.

7. Ohio waters are "impaired" by PCBs if the concentration of PCBs in such waters exceeds the Water Quality Standards for PCBs established by the Ohio Environmental Protection Agency ("Ohio EPA"). High PCB concentrations are the cause of impairment of over 100 significant Ohio waterbodies. In addition, hundreds of other Ohio waterbodies and waterways suffer PCB contamination at detectable levels below the threshold for impairment.

8. Ohio waters in the Southern Lake Erie basin, the Western Lake Erie basin, the Great Miami River basin, the Wabash River basin, the Scioto River basin, the Muskingum River basin, the Upper Ohio River basin, and the Middle Ohio River basin currently suffer from PCB impairment.

9. The Ohio 2016 Integrated Water Quality Monitoring and Assessment Report (“2016 Integrated Report”) prepared by the Ohio EPA, published in October 2016, finds that “PCB contamination in fish is the cause of most of the human health impairments [of waters] in Ohio.”

10. As a result of Defendants’ misconduct, as alleged herein, Ohioans and Ohio natural resources are presently exposed to dangerous levels of PCBs manufactured, marketed, distributed, and introduced into commerce by Defendants.

11. At the time they manufactured, marketed, distributed, and sold PCBs—often under the trade name “Aroclor”—Defendants knew PCBs were highly toxic, harmful to human and animal health, and environmentally destructive. For example, an internal Monsanto memorandum from 1937 acknowledges that PCBs produce “**systemic toxic effects**” resulting from prolonged exposure.¹ In the 1950s, Monsanto’s Medical Office specifically advised workers not to eat lunch in the PCB department. In that connection, Monsanto’s medical director openly declared that, “[w]e know Aroclors are toxic.”²

12. Although they knew that their PCBs were contaminating natural resources and living organisms on a scale their personnel admitted was “**global**,”³ and that PCBs

¹ See Exhibit 1 (MONS 061332). All in-text style modifications (bold and italics) are added unless otherwise noted.

² See Exhibit 2 (MONS 095196).

³ See Exhibit 3 (MONS 030483).

were “**toxic**”⁴ and indeed “**about the same as DDT in mammals,**”⁵ Defendants embarked on a decades-long campaign of misinformation and deception in order to prolong the manufacture, sale, and use of PCBs in Ohio and elsewhere.

13. Indeed, internal talking-points memos designed to assist Monsanto employees fielding questions and concerns from customers about PCB toxicity remind those employees that Monsanto “**can’t afford to lose one dollar of business.**”⁶

14. The U.S. EPA finally banned PCBs in 1979, when the final rules implementing the TSCA came into force. For many years prior to the TSCA’s enactment and the U.S. EPA’s implementing regulations, Defendants vigorously denied in public statements that PCBs are harmful to human and environmental health, despite accumulating a wealth of knowledge contradicting such statements.

15. Defendants sold PCBs for a variety of commercial and industrial purposes. PCBs were sold for use in paints, caulks, inks, dyes, lubricants, sealants, plasticizers, coolants, hydraulic fluids, fireproofing, and industrial electrical equipment such as capacitors and transformers, among other applications. Defendants also manufactured and sold various products incorporating their PCBs.

16. As Defendants knew, PCBs regularly volatilize and leach, leak, off-gas, and escape their intended applications, contaminating runoff during naturally occurring storm

⁴ See Exhibit 2 (MONS 095196).

⁵ See Exhibit 4 (MONS 098480).

⁶ See Exhibit 5 (MONS 100123) at -24.

and rain events and entering groundwater, waterways, waterbodies, and other waters, sediment, soils, and plants, as well as fish and other wildlife throughout Ohio.

17. Furthermore, as Defendants knew, PCBs disposed of in landfills and other types of waste facilities regularly leach, leak, off-gas, and escape their disposal sites, entering Ohio waters, soils, and wildlife.

18. As Defendants also knew, PCBs substantially persist in the natural environment rather than breaking down over time. The environmental persistence of PCBs and their resistance to breaking down is highly correlated with their chlorine content: the higher the chlorine content in a given PCB formulation, the more persistent it is.

19. Compounding this hazard, as Defendants knew, PCBs bioaccumulate and biomagnify in animal tissue, including in fish tissue and human tissue. As a result, as time passes, PCB contamination poses an increasingly hazardous threat to Ohio residents' health.

20. PCB contamination is responsible for an indeterminate number of adverse health consequences in Ohioans.

21. Defendants' PCBs are present and have impaired or contaminated the public natural resources of Ohio waters, including without limitation those set forth above, as well as other parts and natural resources of the State, including without limitation

sediment, land and soil, submerged lands, groundwater, surface water, bedlands, tidelands, wildlife, fish, shellfish, aquifers, biota, and air.

22. Defendants' PCBs have caused and will continue to cause direct damage to Ohio's public natural resources.

23. Ohio has incurred and will continue to incur significant costs to identify and reduce sources of Defendants' PCBs entering and contaminating public natural resources within the State. Ohio also has incurred significant costs in monitoring, investigating, analyzing, and remediating Defendants' PCBs in the environment. Ohio and its residents have borne costs of treating and managing PCB-contaminated waters and soils.

II. JURISDICTION AND VENUE

24. The natural resources that are the subject of this suit all rest within the State of Ohio. No federal subject-matter jurisdiction exists or is invoked herein.

25. Venue is appropriate pursuant to Ohio Rules of Civil Procedure 3(B)(6) because a portion of the claim for relief arose in Hamilton County. The harm created by Defendants' conduct is located throughout Ohio, including Hamilton County. The property, natural resources, and injury in question includes without limitation water, wildlife, air, soil, and land, and submerged lands, including those within Hamilton County. Defendants' PCBs were sold and used in Hamilton County.

III. PARTIES

A. PLAINTIFF

26. The State of Ohio, by its Attorney General Michael DeWine, brings this suit pursuant to its inherent *parens patriae* authority to remedy an injury to its “quasi-sovereign interest” in the physical and economic health and well-being of a substantial segment of its population, and pursuant to its responsibilities and authority as trustee of public natural resources.

27. Ohio enjoys *parens patriae* standing in this suit because its residents are adversely affected by the presence of PCBs in the State’s public natural resources and/or suffer loss through monetary assessments or expenditures that contribute in part to the cleanup of PCBs.

28. Defendants’ PCB contamination constitutes injury to Ohio’s public natural resources and to other property and waters of the State, for which Ohio seeks damages, including on behalf of itself and on behalf of its residents in its *parens patriae* capacity.

29. Ohio has a quasi-sovereign interest in and fiduciary obligation to protect its public natural resources, including air, soils, and lands, aquatic and submerged lands, waters, aquifers, wildlife, fish, shellfish, biota, and other natural resources.

30. Ohio has a proprietary interest in protecting all property owned by the State and has an interest in remediating the contamination of its property and in preventing future contamination.

31. Ohio has spent and will continue to spend substantial sums to remediate Defendants' PCBs.

32. Injury to public natural resources caused by Defendants' PCBs has resulted in loss of public use and enjoyment of those resources. The economic value of these natural resources, as well as the cost of restoring them, is substantial.

B. DEFENDANTS

33. Defendant Monsanto Company is a Delaware corporation with its principal place of business in St. Louis, Missouri.

34. Defendant Solutia, Inc. is a Delaware corporation with its principal place of business in St. Louis, Missouri. Solutia is a wholly-owned subsidiary of Eastman Chemical Company.

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

36. Old Monsanto operated an agricultural products business, a pharmaceutical and nutrition business, and a chemical products business. Old Monsanto began manufacturing PCBs in 1935 after acquiring Swann Chemical Company, which manufactured PCBs from 1929 to 1935. Old Monsanto continued to manufacture commercial PCBs until the late 1970s.

37. Through a series of transactions beginning in approximately 1997, Old Monsanto's businesses were spun off to form three separate corporations.

38. The corporation now known as Monsanto Company operates Old Monsanto's agricultural products business.

39. Old Monsanto's chemical products business is now operated by Solutia.

40. Old Monsanto's pharmaceuticals business is now operated by Pharmacia.

41. Solutia was organized by Old Monsanto to own and operate its chemical manufacturing business. Solutia assumed the operations, assets, and liabilities of Old Monsanto's chemical business.

42. Although Solutia assumed and agreed to indemnify Pharmacia (then known as Monsanto Company) for certain liabilities related to the chemicals business, Defendants have also entered into agreements to share or apportion liabilities, and/or to indemnify one or more entities, for claims arising from Old Monsanto's chemical business, including the manufacture and sale of PCBs.

43. In 2003, Solutia filed a voluntary petition for reorganization under Chapter 11 of the U.S. Bankruptcy Code. Solutia's reorganization was completed in 2008. In connection with Solutia's Plan of Reorganization, Solutia, Pharmacia, and Monsanto entered into several agreements under which Monsanto continues to manage and assume financial responsibility for certain tort litigation and environmental remediation related to the chemicals business.

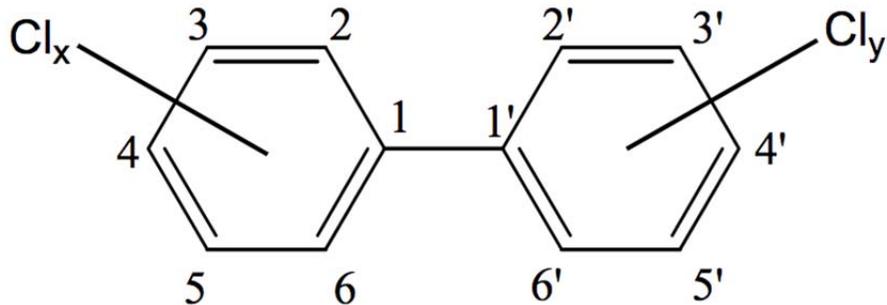
44. In its Form 10-K for 2016, filed with the U.S. Securities and Exchange Commission, Monsanto Company represented: “Monsanto is involved in environmental remediation and legal proceedings to which Monsanto is a party in its own name and proceedings to which its former parent, Pharmacia LLC or its former subsidiary, Solutia, Inc. is a party but that Monsanto manages and for which Monsanto is responsible pursuant to certain indemnification agreements. In addition, Monsanto has liabilities established for various product claims. With respect to certain of these proceedings, Monsanto has established a reserve for the estimated liabilities.” The filing specifies that the company holds \$545 million in that reserve as of August 31, 2016.

IV. FACTUAL ALLEGATIONS

A. PCBs ARE DANGEROUS CHEMICALS THAT THREATEN HUMAN AND ENVIRONMENTAL HEALTH AND SAFETY

1. Physical and Chemical Properties of PCBs

45. PCBs are a class of synthetic organic chemical compounds in which a minimum of 2 and a maximum of 10 chlorine atoms are attached to the biphenyl molecule. The general chemical structure of chlorinated biphenyls is shown below (*source*: “Chemical and Physical Information,” in U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, TOXICOLOGICAL PROFILE FOR POLYCHLORINATED BIPHENYLS (PCBs) (December 2000), available at <https://www.atsdr.cdc.gov/toxprofiles/tp17-c4.pdf>).



46. There are no known natural sources of PCBs in the environment.

47. PCBs are either oily liquids or solids, and are colorless to light yellow. They have no known smell or taste.

48. Due to their chemical structure, a number of chlorinated compounds are possible. Defendants manufactured PCB compounds primarily under the “Aroclor” trade name. Aroclors are differentiated principally by the composition of chlorine by weight, so, for example, “Aroclor 1254” means the mixture contains approximately 54% chlorine by weight.

49. PCBs do not burn easily, are hydrophobic (i.e., they do not dissolve in water but rather cluster together), and bioaccumulate and biomagnify in living tissue.

50. PCBs entered the air, water, and soil during their manufacture by Defendants and their ordinary use by Defendants and Defendants’ commercial customers from 1929 to 1977. Applications containing PCBs, such as road paint and caulking, gradually release PCBs into the natural environment due to the chemical compound’s tendency to volatilize. Moreover, PCBs and PCB-contaminated wastes generated during

manufacturing processes were routinely disposed in landfills by Monsanto and its commercial customers. PCBs also entered the environment from spills or leaks during the transport of the chemicals, and from leaks or fires in transformers, capacitors, or other products containing PCBs, and from the burning of wastes in some municipal or industrial incinerators.

51. Once in the environment, PCBs do not break down readily and may remain for decades absent remediation, cycling easily between air, water, and soil and traveling to distant locations as a result. In general, the more chlorine atoms the PCBs contain, the slower they break down.

52. PCBs are present as solid particles or vapor in the atmosphere. They eventually return to land and water by settling as dust or in rain and snow.

53. In water, PCBs travel along currents and attach to bottom sediment or particles in the water, and evaporate into air or settle into sediment. Sediments contaminated with PCBs also release PCBs into surrounding water.

54. PCBs stick strongly to soil and will not usually be carried deep into the soil with rainwater, but can contaminate groundwater flows.

55. As a gas, PCBs can accumulate in the leaves and above-ground parts of plants and food crops.

56. PCBs are taken up into the bodies of small organisms and fish in water. They are also taken up by other animals that eat these aquatic animals as food. PCBs

especially accumulate in fish and marine animals reaching levels that may be many thousands of times higher than in water because PCBs bioaccumulate and biomagnify over time in living tissue. Indeed, PCB levels are highest in animals higher up in the food chain.

57. PCBs are inert in that they resist both acids and alkalis, and have thermal stability. These properties facilitated the use of PCBs as heat-resistant fluids in a variety of applications, including dielectric fluids in transformers and capacitors, heat-transfer fluids, and lubricants.

58. PCBs are soluble in lipids, including body fat.

2. Health effects of exposure to PCBs

59. Humans are exposed to PCBs primarily from eating contaminated food, breathing contaminated air, or drinking or swimming in contaminated water. The major dietary sources of PCBs are fish (especially sportfish caught in contaminated waterbodies), meat, and dairy products. PCBs also collect in milk fat and can enter the bodies of infants through breast-feeding.

60. Fetuses in the womb are also exposed to PCBs through their mothers. Studies show that babies born to mothers exposed to high concentrations of PCBs in the workplace or from eating PCB-contaminated fish suffer from lower birth weight than other babies. Babies born to women exposed to PCBs before and during pregnancy

showed abnormal responses to infant behavioral tests, including motor skills, and experienced short-term memory deficiencies.

61. Many studies have examined how PCBs affect human health. Human health effects associated with PCB exposure include without limitation liver, thyroid, dermal, and ocular changes, immunological alterations, neurodevelopmental and neurobehavioral changes, reduced birth weight, reproductive toxicity, and cancer.

62. Liver changes associated with PCB exposure include liver enlargement, microsomal enzyme induction (altered metabolism), increased levels of enzymes indicative of hepatocellular damage and serum and tissue biochemical changes indicative of liver dysfunction, histopathological changes concerning fat deposition, as well as fibrosis and necrosis.

63. Thyroid changes associated with PCB exposure include goiter and increased thyroid gland volume, histological changes in the thyroid gland indicative of stimulation of the gland and disruption of the processing of follicular colloid needed for normal production and secretion of thyroid hormone, depressed thyroid hormone levels, and modified (increased or decreased) activity in producing and transferring enzymes necessary for thyroid hormone production. Due to the importance of the thyroid to brain development, PCBs' effects on the thyroid produce neurodevelopmental effects.

64. Dermal changes associated with PCB exposure include skin irritation, chloracne (a dermatological condition starting with formation of keratin plugs and inflammatory folliculitis), and nail and skin pigmentation changes.

65. Ocular changes associated with PCB exposure include hypersecretion of Meibomian glands, abnormal pigmentation of the conjunctiva, and swollen eyelids.

66. Immunological alterations associated with PCB exposure include decreased antibody levels, changes in T cell subsets, and increased susceptibility to respiratory tract infections, infectious illnesses, and middle ear infections.

67. Neurological changes associated with PCB exposure include abnormal reflexes and deficits in memory, learning, impulse control, and IQ. Such changes impact infants and children more severely than adults.

68. Reproductive changes associated with PCB exposure include menstrual disturbances in women and effects on sperm morphology and production in men, all of which can result in difficulty conceiving.

69. PCBs are associated with a number of cancers, including cancer of the liver, biliary tract, intestines, and skin (melanoma).

70. Studies of workers routinely exposed to PCBs show that PCB exposure is associated with irritation of the nose and lungs, gastrointestinal discomfort, changes in the blood and liver, and depression and fatigue, as well as cancer of the liver and biliary tract.

71. The U.S. EPA has determined that PCBs are probable human carcinogens. In 1996, EPA reassessed PCB carcinogenicity based on data related to Aroclors 1016, 1242, 1254, and 1260. EPA's cancer reassessment was peer-reviewed by 15 experts on PCBs, including scientists from government, academia, and industry. All experts agreed that PCBs are probable human carcinogens.

72. The U.S. Department of Health and Human Services' National Toxicology Program considers PCBs to be "reasonably anticipated" carcinogens.

73. The International Agency for Research on Cancer, an intergovernmental agency forming part of the World Health Organization of the United Nations, concluded in March 2013, based on the assessments of 26 experts from 12 countries, that PCBs are known human carcinogens.

74. The IARC announced in March 2013:

"On the basis of sufficient evidence of carcinogenicity in humans and experimental animals, the Working Group classified PCBs as carcinogenic to humans. The classification is based on consistent association between PCB exposure and increased risk of melanoma in humans. There is also limited evidence from some studies suggesting that exposure is linked to increased risks of non-Hodgkin lymphoma and breast cancer."

75. In its formal 2015 report, the IARC stated unequivocally, "There is sufficient evidence in humans for the carcinogenicity of [PCBs]. PCBs cause malignant melanoma. Positive associations have been observed for non-Hodgkin lymphoma and cancer of the breast. ... PCBs are carcinogenic to humans. . . ."

76. In animal studies, PCBs were shown to be strongly associated with liver damage and death in rats; anemia, acne-like skin conditions, and liver, stomach, and thyroid gland injuries in rats, mice, and monkeys; and liver, kidney, and skin damage in rabbits and mice. Other effects of PCB exposure in animals include reduction in immune system function, behavioral alterations, and impaired reproduction.

77. Studies of rats exposed to PCBs showed that PCBs are associated with liver cancer.

78. Animal studies also show that exposure to PCBs causes an increased incidence of prenatal death and changes in the immune system, thyroid, and reproductive organs. Studies in monkeys showed that young animals developed skin effects from nursing after their mothers were exposed to PCBs.

3. PCBs are global contaminants

79. PCBs have been released to the environment solely by human activity. PCBs are globally circulated and are present in all environmental media.

80. PCBs are predominantly redistributed from one environmental compartment to another—soil to water, water to air, air to water, sediment to water—so the majority of PCBs in the air, for example, results from volatilization of PCBs from soil and water.

81. The ordinary and intended application of PCBs (in, for instance, paints, caulks, lubricants, hydraulic and heat-transfer fluids, transistor and capacitor fluids, and so on) has resulted in the release of PCBs into Ohio air, waters, and soils, due principally

to the chemical compound's well-known tendency to volatilize or redistribute itself across different environmental compartments.

82. Moreover, PCBs may be released to the atmosphere from landfills and hazardous waste sites, incineration of PCB wastes, leakage and runoff from older electrical equipment in use or improperly disposed.

83. PCBs may also be released to water from spillage of PCB-containing hydraulic fluids, improper disposal, combined sewer overflows or storm water runoff, and from runoff and leachate from PCB-contaminated sewage sludge applied to farmland.

84. PCBs may further be released to soil from leaks and spills, releases from contaminated soils in landfills and hazardous waste sites, deposition of vehicular emissions near roadway soil, and land application of sewage sludges containing PCBs.

85. Due to their uncontrollable environmental circulation, which was known to Defendants, Defendants internally acknowledged that PCBs are “**global contaminants**”—even as they continued to increase their production of PCBs and to conceal or deny any association of adverse human health and ecological effects with PCBs.⁷

⁷ See Exhibit 3 (MONS 030483).

B. DEFENDANTS KNEW PCBs WERE DANGEROUS CONTAMINANTS AT THE TIME OF MANUFACTURE, MARKETING, SALE, AND DISTRIBUTION

86. Defendants developed an early, sophisticated understanding of PCB toxicity.

For instance, in an October 1937 memorandum prepared by Old Monsanto personnel, Defendants already internally acknowledged that PCBs produce “**systemic toxic effects**” as a result of prolonged exposure to PCB vapors or oral ingestion, and that bodily contact with PCBs produces “an acne-form skin eruption.”⁸

87. A year earlier, in 1936, many workers at a New York facility using PCBs and operated by Halowax Corporation were afflicted with severe chloracne. Three workers died and autopsies revealed severe liver damage in two of them.

88. Halowax Corporation asked Harvard University researcher Cecil K. Drinker to investigate the issue, and Dr. Drinker’s analysis was presented at a 1937 meeting attended by personnel employed by Old Monsanto, General Electric, Halowax, the U.S. Public Health Service, and various state health officials.

89. Dr. Drinker’s tests demonstrated that rats exposed to PCBs suffered severe liver damage. The results were published in a September 1937 issue of the *Journal of Industrial Hygiene and Toxicology*.

⁸ See Exhibit 1 (MONS 061332).

90. Old Monsanto retained Dr. Drinker to conduct further animal studies. In one report, dated September 15, 1938, a study confirms liver damage in rats exposed to various formulations of PCB compounds.⁹

91. As a further illustration of Defendants' knowledge of PCB toxicity, Old Monsanto Medical Director Dr. R. Emmet Kelly bluntly admitted in a September 1955 memorandum that, "**We know Aroclors are toxic[.]**"¹⁰

92. Dr. Kelly candidly observes in the same document that, "It does not make too much difference [that Monsanto has not yet identified the precise limit of exposure beyond which adverse effects develop in humans], it seems to me, because our main worry is what will happen if an individual develop[s] 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 [maximum allowable concentrate levels]."¹¹

93. Before penning that damning 1955 admission that Defendants "know Aroclors are toxic" and are associated with "liver disease," Dr. Kelly acknowledged in February 1950 that when workers fell ill at an Indiana factory that used PCBs in the manufacturing process, he immediately "suspected the possibility that the Aroclor fumes may have caused liver damage."¹²

⁹ See Exhibit 6 (MONS 048123) at -27-30.

¹⁰ See Exhibit 2 (MONS 095196).

¹¹ See Exhibit 2 (MONS 095196).

¹² See Exhibit 7 (M11678).

94. Indeed, an Aroclor manual prepared by Defendants plainly acknowledges that in the “early days of development,” workers at a plant in Anniston, Alabama processing PCBs had developed chloracne and liver problems.

95. Old Monsanto’s Medical Department prohibited workers from eating lunch in the Aroclor department in November 1955. The Department memorandum explains that “Aroclor vapors and other process vapors could contaminate the lunches unless they were properly protected,” and that “[w]hen working with this material, the chance of contaminating hands and subsequently contaminating the food is a definite possibility.” The memo also states, “It has long been the opinion of the Medical Department that eating in process departments is a potentially hazardous procedure that could lead to serious difficulties. While the Aroclors are not particularly hazardous from our own experience, this is a difficult problem to define because early literature work claimed that chlorinated biphenyls were quite toxic materials by ingestion or inhalation.”¹³

96. Defendants attempted, but failed, to convince the U.S. Navy to use their PCB products in submarines. In January 1957, Dr. Kelly reported that, “No matter how we discussed the situation, it was impossible to change their thinking that Pydraul 150 [a PCB congener marketed by Old Monsanto] is just too toxic for use in a submarine.”¹⁴

¹³ See Exhibit 8 (Unlabeled memo from Jack T. Garrett to H.B. Patrick, Nov. 14, 1955).

¹⁴ See Exhibit 9 (MONS 095640).

97. The first public warning that PCBs were becoming ubiquitous in the natural environment came when Søren Jensen, a Swedish chemist at Stockholm University's Institution of Analytical Chemistry, who was analyzing DDT accumulations in nature, accidentally found enormous quantities of unknown substances later identified as PCB compounds in wildlife. Dr. Jensen published a short statement in *New Scientist* in 1966 ("Report of a New Chemical Hazard"), estimating that PCBs may be spreading through environments in high volumes due to their use by manufacturing interests.

98. Dr. Jensen studied the compounds for years before positively identifying them as PCBs. His formal results, which were published in a 1969 issue of *Nature*, showed very high PCB concentrations in Baltic Sea fauna such as white-tailed sea eagles. As a recent commentator observed, summarizing the implications of Dr. Jensen's results, "PCBs had entered the environment in large quantities for more than 37 years and were bioaccumulating along the food chain."

99. In December 1968, *Nature* published an article by Dr. Richard Risebrough of the University of California entitled, "Polychlorinated Biphenyls in the Global Ecosystem." The article assesses PCB presence in marine wildlife and reports high concentrations of PCBs detected in peregrine falcons and 34 other bird species, drawing an immediate connection between PCBs and the catastrophic decline of peregrine falcon populations in the United States.

100. Defendants' personnel took note of Dr. Risebrough's article, recognizing the public-relations disaster it portended. W.R. Richard, an Old Monsanto employee, wrote in early 1969 that the article shows not only that PCBs are "toxic substance[s]" but also that, since they are easily and broadly distributed in air and water, they are "an uncontrollable pollutant ... causing [the] extinction of [the] peregrine falcon ... [and] endangering man himself."¹⁵

101. Later that year, in September 1969, W.R. Richard wrote a memorandum titled, "Defense of Aroclor." Richard's memo notes that critics of PCBs have raised a multitude of different issues with the compounds, so "[w]e can't defend vs. everything. Some animals or fish or insects will be harmed. Aroclor degradation 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." Richard also observes that, when agencies or others test for PCBs in the Great Lakes region, "Aroclor 1254 will be found!" In the same document, Richard admits that PCBs will leak from virtually all applications, including such "closed" applications as air compressor, heat transfer, and capacitor fluids.¹⁶

102. An "Aroclor Ad Hoc Committee" was formed in that same month to strategize about saving Defendants' PCB business in light of the growing public outcry,

¹⁵ See Exhibit 10 (MONS 096509).

¹⁶ See Exhibit 11 (DSW 014256) at -56-59.

and growing evidence of PCBs' toxicity and environmental harms. The meeting minutes observe that PCBs have been found in fish, oysters, shrimp, and birds, along the coasts of industrialized areas including Great Britain, Sweden, the Rhine River, Lake Michigan, Pensacola Bay, and in wildlife throughout the Western hemisphere. The minutes acknowledge that PCBs may be considered **“a global contaminant.”**¹⁷

103. The Committee acknowledged that normal uses of PCB-containing products were the cause of the global contamination: “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.**”¹⁸

104. The Committee attempted to formulate a response to growing concerns over PCBs, including those reflected by the U.S. Department of the Interior's Fish and Wildlife Service (which found PCBs in dead eagles and marine birds), the Bureau of Commercial Fisheries (which found PCBs in the river below Monsanto's Pensacola plant), and the U.S. Food and Drug Administration (which found PCBs in milk supplies). The Committee quickly abandoned any notion that Defendants could alleviate or discredit the public health and environmental concerns raised by the recent studies and

¹⁷ See Exhibit 3 (MONS 030483).

¹⁸ See Exhibit 3 (MONS 030483) at -85.

governmental reports. Instead, the Committee focused on keeping the PCB business afloat *in spite of* these concerns.¹⁹

105. Indeed, the Committee's constitutive agenda is to: "1. Protect continued sales and profits of Aroclors; 2. Permit continued development of new uses and sales; and 3. Protect the image of the Organic Division and the Corporation as members of the business community recognizing their responsibilities to prevent and/or control contamination of the global ecosystem."²⁰

106. As the minutes reflect, "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.**" However, the Committee advised, while "there is no practical course of action that can so effectively police the uses of these products as to prevent environmental contamination ... **[t]here are ... 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.**"²¹

¹⁹ See Exhibit 12 (DSW 014612) at -20.

²⁰ See Exhibit 12 (DSW 014612).

²¹ See Exhibit 12 (DSW 014612) at -15.

107. Defendants not only continued producing Aroclors through 1969, but increased production that year and in 1970, which were the highest volume production years in the history of PCBs.

108. Elmer Wheeler, in Old Monsanto's Medical Department, circulated laboratory reports discussing results of animal studies in January 1970, in which Dr. Wheeler noted that, "**PCBs are about the same as DDT in mammals.**"²²

109. At the same time, in January 1970, the journal *Environment* published a note authored by Old Monsanto: "Monsanto Statement on PCB." The company note acknowledges that recent studies, including Dr. Jensen's studies, indicate PCBs' widespread presence in the natural environment, and expresses the company's "concern[] over the situation."

110. However, the note defends PCBs by deploying a variety of flawed arguments and false statements that Old Monsanto used on multiple occasions in the late 1960s and early 1970s.

111. In particular, Old Monsanto defends its PCB business by arguing, among other things, that (a) a "principal market" for PCBs is in closed electrical applications, where PCBs are "completely sealed in metal containers" and (the note implies) incapable of escape; (b) PCBs are also used in polymers meant for applications as adhesives, elastomers, and surface coatings, and so again are (the note implies) incapable of escape;

²² See Exhibit 4 (MONS 098480).

(c) PCBs are not “to our knowledge” used in “household products”; and (d) it is simply “not true” that PCBs are “highly toxic,” but that Old Monsanto is conducting various research programs into PCB toxicity in fish and mammals and PCB presence in waters and soils, and “[v]ery early results of chronic toxicity studies confirm that PCBs are not highly toxic.”

112. Defendants knew each of those statements was false or misleading at the time they were made.

113. Statements (a) and (b) are misleading because Defendants knew PCBs would leach, leak, off-gas, and escape their ordinary and intended applications, and/or would leach, leak, off-gas, and escape their disposal sites, regardless of the nature of the application. For example, as the Aroclor Ad Hoc Committee minutes prepared in September 1969 declare, “Through abrasion and leaching we can assume that nearly all of this Aroclor [used in surface applications] winds up in the environment.”²³

114. Statement (c) is false because Defendants themselves aggressively promoted the use of PCBs in “household products.” For example, in a 1960 brochure, Defendants promoted the use of Aroclors not only in a variety of industrial or commercial applications (including transformers, capacitors, utility transmission lines, electric motors, fluorescent light ballasts, wire and cable coatings, impregnants for insulation, dielectric sealants, chemical processing vessels, drying ovens, furnaces, vacuum diffusion

²³ See Exhibit 3 (MONS 030483) at -85.

pumps, plasticizers, resins, aircraft parts, and wood and metal maritime equipment), but also in products with which ordinary consumers come into regular contact, such as home appliances, food cookers, potato chip fryers, thermostats, automotive transmission oil, insecticides, waxes used in dental casting, jewelry, lubricants, adhesives, moisture-proof coatings, printing inks, papers, sealants and caulking compounds, tack coatings, asphalt, paints, varnishes, lacquers, masonry coatings for swimming pools, stucco homes, and highway paints, and protective or decorative coatings for a number of other finishes.²⁴

115. Moreover, a 1961 brochure published by Old Monsanto explains that Aroclors are presently being used 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.²⁵

116. The messaging reflected in statement (c) in Old Monsanto’s 1970 note published in *Environment* is of a piece with the company’s broader defense of PCBs. In July of 1970, Old Monsanto issued a press release claiming that, “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

²⁴ See Exhibit 13 (LEXOLDMON004615).

²⁵ See Exhibit 14 (0627503).

and cooling systems. **It is not a ‘household’ item.**”²⁶ This messaging stands in stark contrast to the marketing and promotional statements Defendants issued for decades.

117. Statement (d) is false because Defendants knew PCBs were highly toxic well before January 1970, when the note was published, and that a number of studies, both internal and external, had already shown human and animal toxicity as well as prevalent contamination of waters and soils.

118. Moreover, as Old Monsanto’s Elmer Wheeler wrote in the very month the “Monsanto Statement on PCB” was published in *Environment*, Defendants knew that **“PCB’s are about the same as DDT in mammals,”**²⁷ i.e., toxic, harmful, and potentially lethal.

119. Indeed, in February 1970, Defendants’ personnel circulated a talking-points memorandum to be used in engaging with customers raising concerns over PCB toxicity. Old Monsanto had reformulated certain high-chlorine congeners (Aroclor 1254 and 1260) but resisted any product returns, explaining that Defendants **“can’t afford to lose one dollar of business.”**²⁸ Accordingly, the memo instructs employees to advise customers to use up their existing Aroclor 1254 and 1260 stock before topping up with new fluids: **“We don’t want to take fluid back.”**²⁹

²⁶ See Exhibit 15 (Monsanto Press Release, July 16, 1970).

²⁷ See Exhibit 4 (MONS 098480).

²⁸ See Exhibit 5 (MONS 100123) at -24.

²⁹ See Exhibit 5 (MONS 100123).

C. DEFENDANTS FAILED TO WARN THE PUBLIC AND THEIR CUSTOMERS ABOUT PCB HAZARDS, AND PROVIDED IMPROPER DISPOSAL INSTRUCTIONS TO CUSTOMERS

120. Despite knowing that PCBs are toxic to human and environmental health, and that PCBs would leach, leak, off-gas, and escape their ordinary and intended applications and leach, leak, off-gas, and escape their disposal sites—regardless of the nature of the application—to contaminate waters, soils, and air, Defendants issued no public warning or instruction about PCBs or the health and environmental safety hazards they present. Indeed, as alleged above, in public statements, Defendants expressly denied the harmfulness and environmental toxicity of PCBs. Although Defendants eventually disclosed to their direct commercial customers certain hazards associated with long-term or high volume exposure to PCBs in the workplace, Defendants made no such public disclosure and instructed their customers to dispose of PCB materials and wastes in local landfills.

121. Despite the breadth of its knowledge of PCB contamination, even Old Monsanto itself failed to take adequate precautions in disposing of PCBs and PCB-contaminated waste that it generated. Its staff routinely disposed of PCB wastes in an unsafe manner. For example, sanitation staff handling on-site spills would routinely sweep PCB materials into the drainage system rather than collect it for proper disposal. Moreover, Old Monsanto operated an open outdoor dump site in which it would routinely dispose of PCB wastes, among other things.

122. Indeed, Old Monsanto executive William Papageorge wrote in a letter dated March 6, 1970 that, “All waste containing PCB’s [sic] is at present hauled to the dumps the plants have been using for other plant waste. **We recognize this is not the ultimate, since PCB’s [sic] could eventually enter the environment, but we will continue this practice until better methods of disposal are available.**”

123. As Mr. Papageorge explained in testimony provided in 1975 to the Wisconsin Department of Natural Resources, Old Monsanto instructed its customers to dispose of PCB-contaminated wastes in landfills: “we have to reluctantly suggest, because we don’t have a better answer, that they [i.e., Monsanto’s commercial customers] find a well operated, properly operated landfill and dispose of the material in that fashion.”

D. DEFENDANTS CONCEALED PCBs’ TOXICITY FROM PUBLIC ENTITIES

124. As alleged above, Old Monsanto adopted a defensive posture in the late 1960s and early 1970s in response to growing public concern over the toxicity of PCBs. Even as governmental investigations and formal inquiries were launched, Old Monsanto doubled down on its campaign of misinformation and denial.

125. An internal memorandum prepared by Dr. Emmet Kelly and dated February 10, 1967, addressing the problem of “Aroclor in the air and in various fish and other living reservoirs,” indicates that: “We are very worried about what is liable to happen in the [United 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.” The memo continues: “We have been receiving quite a few communications from our customers, but the most critical one is NCR, who are very much involved with their carbonless carbon paper. ... The consensus in St. Louis is that while Monsanto would like to keep in the background in this problem, we don’t see how we will be able to in the United States. We feel our customers, especially NCR, may ask us for some sort of data concerning the safety of these residues in humans. This obviously might be opening the door to an extensive and quite expensive toxicological/pharmacological investigation.”³⁰

126. Old Monsanto’s Aroclor Ad Hoc Committee, its mendacious company note in the *Environment* journal, its misrepresentations to public entities and customers, and other tactics alleged herein were all designed to conceal the toxicity and hazardousness of PCBs to humans and the natural environment from the public.

127. In an internal presentation to the Corporate Development Committee, Old Monsanto personnel explained that Aroclors represent “one of Monsanto’s most profitable franchises,” generating \$22 million in annual revenues and gross annual profits of \$10 million. The presentation advises against exiting the Aroclor market, stating, “there is too much customer/market need and selfishly too much Monsanto profit to go

³⁰ See Exhibit 16 (MONS 031358) at -58-59.

out.”³¹ As another internal Monsanto memorandum remarks, “There can not be too much emphasis given to the threat of curtailment or outright discontinuance of the manufacture and sales of this very profitable series of compounds.”³²

128. Adjusted for inflation, according to the methodology adopted by the U.S. Bureau of Labor Statistics’ CPI Inflation Calculator, Old Monsanto’s annual PCB revenues (circa 1969) are equivalent to roughly \$148 million in late 2017, and its annual PCB profits (circa 1969) are equivalent to roughly \$69 million in late 2017. Old Monsanto was plainly unwilling to abandon its hand-over-fist profiteering, even as its products endangered the natural environment and the lives of millions and, indeed, generations.

129. Defendants aggressively denied PCBs’ toxicity in terms of both human and environmental safety in communications with regulators and public entities. For example, Howard S. Bergen, who worked in Old Monsanto’s Functional Fluids division, sent a letter dated March 27, 1969, to the Regional Water Quality Control Board of the San Francisco Bay Region, in which he claimed that PCBs are associated with “no special health problems,” and that due to PCBs’ chemical inertness, “we would anticipate

³¹ See Exhibit 17 (MONS 058730) at -33, -37.

³² See Exhibit 12 (DSW 014612) at -24.

no problems associated with the environment from refuse dumps.”³³ Both of those statements were false.

130. Old Monsanto’s Elmer Wheeler wrote in an internal memorandum dated May 26, 1969 to W.R. Richard, another Old Monsanto executive that he had spoken with a representative of the National Air Pollution Control Administration, who promised to relay to Congress the message that Old Monsanto “cannot conceive how the PCBs can be getting into the environment in a widespread fashion.”

131. Old Monsanto delivered the same message to a number of other public entities, regulators, and authorities, including the New Jersey Department of Conservation in July 1969. Old Monsanto there claimed that, “Based on the available data, manufacturing and use experience, we do not believe PCBs to be seriously toxic,” adding that, “[W]e are unable at this time to conceive of how the PCBs can become wide spread in the environment. It is certain that no applications to our knowledge have been made where the PCB’s would be broadcast in the same fashion as the chlorinated hydrocarbon pesticides have been.”³⁴ Those statements were false.

132. Dr. Emmet Kelly, in correspondence dated March 30, 1970, wrote to William Papageorge, another Old Monsanto employee, about his communications with

³³ See Exhibit 18 (NEV 031051).

³⁴ See Exhibit 19 (NCR-FOX-0575899).

the Ohio State Board of Health. Dr. Kelly observes that a Dr. Hill of the Ohio State Board of Health

has found PCB, particularly Aroclor 1254, in samples of milk from at least three herds in Ohio. He has traced this contamination back to silage from three different silos. Dr. Hill reported concentrations of 0.2 ppm of PCB in the silage in the center of the silo and up to 20 ppm in the material next to the walls. He also stated that concentrations in the milk were between 0.1 ppm and 0.6 ppm and that some of the milk had been destroyed.

The silos are concrete silos whose interior surfaces were painted in 1967 using a formulation that contained [Aroclor] 1254. I don't know if there was any other Aroclor in the formulation nor do we know the coating manufacturer; although, this could be found out if important. The presence of PCB in the silage came from flaking off of the material and possibly from leaching out during the silage storage. At present they will have to destroy about 150 tons of silage which is valued at about \$30 per ton. As a rough guess, they consider there may be 50 other silos involved in Ohio that were painted with the same formulation. They are also looking into the fat contamination of the cows themselves.

All in all, this could be quite a serious problem, having legal and publicity overtones.

This brings us to a very serious point. When are we going to tell our customers not to use any Aroclor in any paint formulation that contacts food, feed, or water for animals or humans? I think it is very important that this be done.³⁵

133. Old Monsanto had a complete and comprehensive record of all PCB-related scientific research and general reportage during the relevant time period. Indeed, in an August 6, 1971 internal memorandum, Elmer Wheeler admits that, "we have probably

³⁵ See Exhibit 20 (Unlabeled correspondence – Kelly to Papageorge).

the world's best reference file on the PCB situation. This includes reprints from the literature beginning in 1936 to reports issued last week.”³⁶

E. OHIO NATURAL RESOURCES HAVE BEEN DAMAGED BY DEFENDANTS’ PCBs

134. The 2016 Integrated Report, prepared by the Ohio EPA and published in October 2016, concludes that “PCB contamination in fish is the cause of most of the human health impairments [of waters] in Ohio.” Mercury is the second leading cause of human health impairment.

135. With over 58,000 miles of stream channels, as many as 250,000 miles of primary headwater streams (with drainage areas less than 1 square mile), and nearly 119,000 acres of public lakes, Ohio is a water-rich state. The quality of Ohio’s water resources directly affects the quality of life of Ohio citizens.

136. Ohio has strong manufacturing and agricultural industries. The historical patterns of environmental impact in Ohio are related to the geographical distribution of basic industries and land use as well as Ohio’s geology, land form, and other natural features, as these determine the basic characteristics and ecological potential of streams and rivers.

137. Between 1929 and 1977, Defendants sold a large volume of PCBs and PCB-containing products to various customers, including retail and secondary manufacturers, within Ohio.

³⁶ See Exhibit 21 (MONS 029656).

138. Defendants never advised their Ohio customers that their PCBs are toxic to human and environmental health (beyond certain inadequate disclosures concerning workplace exposure to PCBs), and that PCBs would leach, leak, off-gas, and escape their ordinary and intended applications and leach, leak, off-gas, and escape their disposal sites, regardless of the nature of the application, to contaminate Ohio waters, soils, and air. Defendants issued no public warning or instruction about PCBs or the health and environmental safety hazards they present and indeed denied that such hazards exist. Nor did Defendants warn or instruct their commercial customers not to dispose of PCB materials and wastes in landfills, or to otherwise dispose of such materials in a manner calculated to avoid environmental discharge, leakage, leaching, off-gassing, or other form of contamination of Ohio waters, soils, and air.

139. Instead, when Defendants provided any information concerning the use and disposal of PCBs, Defendants denied their toxicity and adverse human and environmental health effects, and advised customers that PCBs and PCB wastes should be deposited in landfills, despite knowing this would result in environmental contamination and human and ecological hazards, as alleged above.

140. As a result, Ohio waters, soils, and air have become contaminated with Defendants' PCBs.

141. The Ohio EPA reports that the following State Water Basins include significant waterbodies exhibiting PCB concentrations above the State's human health impairment limit:

- a. Great Miami River basin;
- b. Lake Erie basin;
- c. Middle Ohio River basin;
- d. Muskingum River basin;
- e. Scioto River basin;
- f. Southern Lake Erie basin;
- g. Upper Ohio River basin;
- h. Wabash River basin; and
- i. Western Lake Erie basin.

142. PCB-impaired waterbodies belonging to the Great Miami River basin include (a) Great Miami River (downstream Bokengehalas Creek to downstream Plum Creek); (b) Great Miami River (downstream Fourmile Creek to mouth); (c) Great Miami River (downstream Mad River to upstream Bear Creek); (d) Great Miami River (downstream Twin Creek to upstream Fourmile Creek); (e) Great Miami River (upstream Cherokee Mans Run to downstream Bokengehalas Creek); (f) Great Miami River mainstem (downstream Tawawa Creek to mouth); (g) Mad River (downstream Chapman Creek to upstream Mud Creek); (h) Mad River (downstream Kings Creek to downstream

Chapman Creek); (i) Mad River (headwaters to downstream Kings Creek); (j) Mad River (upstream Mud Creek to mouth); (k) Mad River mainstem (downstream Donnels Creek to mouth); (l) Twin Creek (headwaters to upstream Bantas Fork); (m) Twin Creek (upstream Bantas Fork to mouth); and (n) Whitewater River mainstem (entire length).

143. PCB-impaired waterbodies belonging to the Lake Erie basin include (a) Lake Erie Central Basin Shoreline; and (b) Lake Erie Islands Shoreline.

144. PCB-impaired waterbodies belonging to the Middle Ohio River basin include (a) Little Miami River (upstream Massies Creek to downstream Beaver Creek); (b) Little Miami River mainstem (downstream Caesar Creek to mouth); (c) Mill Creek; (d) Ohio River Tributaries (downstream Ohio Brush Creek to upstream Eagle Creek); and (e) Pine Creek.

145. PCB-impaired waterbodies belonging to the Muskingum River basin include (a) Black Fork Mohican River (downstream Whetstone Creek to downstream Rocky Fork); (b) Chippewa Creek; (c) Licking River (South Fork/North Fork to downstream Rocky Fork); (d) Muskingum River mainstem (entire length); (e) Nimishillen Creek; (f) Sandy Creek (downstream Still Fork to mouth); (g) Sandy Creek (headwaters to downstream Still Fork); (h) Tuscarawas River (downstream Wolf Creek to downstream Sippo Creek); (i) Tuscarawas River (headwaters to downstream Wolf Creek); (j) Tuscarawas River mainstem (downstream Sippo Creek to mouth); (k) Wakatomika Creek

(downstream Brushy Fork to mouth); (l) Wakatomika Creek (headwaters to downstream Brushy Fork); and (m) Walhonding River mainstem (entire length).

146. PCB-impaired waterbodies belonging to the Scioto River basin include (a) Big Darby Creek (downstream Little Darby Creek to mouth); (b) Big Darby Creek (downstream Sugar Creek to upstream Little Darby Creek); (c) Big Darby Creek (headwaters to downstream Sugar Creek); (d) Little Darby Creek; (e) Olentangy River (downstream Delaware Run to mouth); (f) Olentangy River (downstream Flat Run to downstream Delaware Run); (g) Olentangy River (headwaters to downstream Flat Run); (h) Paint Creek (downstream East Fork to upstream Rocky Fork); (i) Paint Creek (headwaters to downstream East Fork); (j) Paint Creek mainstem (downstream Rocky Fork to mouth); (k) Salt Creek (headwaters to upstream Queer Creek); (l) Scioto River (downstream Big Darby Creek to upstream Kinnikinnick Creek); (m) Scioto River (downstream Paint Creek to upstream Salt Creek); (n) Scioto River (downstream Taylor Creek to upstream Little Scioto River); (o) Scioto River mainstem (downstream Little Scioto River to mouth); (p) Walnut Creek (downstream Sycamore Creek to mouth); (q) Walnut Creek (headwaters to downstream Sycamore Creek); and (r) Whetstone Creek.

147. PCB-impaired waterbodies belonging to the Southern Lake Erie basin include (a) Ashtabula River; (b) Black River (Lake Erie Tributaries east of Black River to west of Porter Creek); (c) Cuyahoga River (downstream Black Brook to downstream Breakneck Creek); (d) Cuyahoga River (downstream Brandywine Creek to downstream

Tinkers Creek); (e) Cuyahoga River (downstream Breakneck Creek to downstream Little Cuyahoga River); (f) Cuyahoga River (downstream Little Cuyahoga River to downstream Brandywine Creek); (g) Cuyahoga River (headwaters to downstream Black Brook); (h) Cuyahoga River mainstem (downstream Brandywine Creek to mouth including Old River Channel); (i) East Branch Black River (headwaters to downstream Coon Creek); (j) East Branch Black River (downstream Coon Creek to mouth); (k) Grand River (downstream Swine Creek to upstream Rock Creek); (l) Grand River (downstream Rock Creek to upstream Mill Creek); (m) Grand River (headwaters to downstream Swine Creek); (n) Grand River mainstem (downstream Mill Creek to mouth); (o) Rocky River (East Branch Rocky River; Lake Erie Tributaries west of Porter Creek to west of Cuyahoga River); (p) West Branch Black River; and (q) West Branch Rocky River.

148. PCB-impaired waterbodies belonging to the Upper Ohio River basin include (a) Cross Creek; (b) Duck Creek (West Fork Duck Creek); (c) Hocking River (enterprise to upstream Monday Creek); (d) Hocking River (headwaters to enterprise); (e) Hocking River mainstem (downstream Scott Creek to mouth); (f) Little Beaver Creek (downstream Middle and West Forks to mouth); (g) Mahoning River (downstream Beech Creek to downstream Berlin Dam); (h) Mahoning River (downstream Berlin Dam to downstream West Branch); (i) Mahoning River (downstream West Branch to upstream Duck Creek); (j) Mahoning River mainstem (downstream Eagle Creek to Pennsylvania border); (k) Middle Fork Little Beaver Creek; (l) Ohio River Tributaries (downstream

Short Creek to downstream Wheeling Creek); (m) Shade River (Middle Branch and West Branch to mouth); (n) Tributaries to Pymatuning Reservoir (within Ohio); (o) Yellow Creek (headwaters to upstream Town Fork); and (p) Yellow Creek (upstream Town Fork to mouth).

149. PCB-impaired waterbodies belonging to the Wabash River basin include Beaver Creek (Grand Lake St. Marys and Tributaries).

150. PCB-impaired waterbodies belonging to the Western Lake Erie basin include (a) Blanchard River (downstream Potato Run to upstream Eagle Creek); (b) Blanchard River (headstream to downstream Potato Run); (c) Blanchard River (upstream Eagle Creek to upstream Ottawa Creek); (d) Blanchard River (upstream Ottawa Creek to upstream Riley Creek); (e) Blanchard River mainstem (downstream Dukes Run to mouth); (f) Lake Erie Western Basin Shoreline (including Maumee Bay and Sandusky Bay); (g) Maumee River mainstem (Indiana border to Lake Erie); (h) Ottawa River (headwaters to upstream Little Ottawa River); (i) Ottawa River (upstream Little Ottawa River to upstream Sugar Creek); (j) Ottawa River (upstream Sugar Creek to mouth); (k) Portage River (downstream North Branch to downstream Sugar Creek); (l) Portage River (downstream South/Middle Branches to downstream North Branch); (m) Portage River (downstream Sugar Creek to mouth; Lake Erie Tributaries west of Marblehead); (n) Sandusky River (downstream Broken Sword Creek to upstream Tymochtee Creek); (o) Sandusky River (headwaters to upstream Broken Sword Creek); (p) Sandusky River

mainstem (downstream Tymochtee Creek to mouth); (q) St. Joseph River (downstream Bear Creek to downstream Sol Shank Ditch (Indiana)); (r) St. Joseph River (East/West Branches to downstream Bear Creek); (s) St. Mary's River (downstream Sixmile Creek to downstream Twelvemile Creek); (t) St. Mary's River (downstream Twelvemile Creek to upstream Twentyseven Mile Creek (Indiana)); (u) St. Mary's River (headwaters to downstream Sixmile Creek); (v) Tenmile Creek; Ottawa River; (w) Tiffin River (downstream Leatherwood Creek to upstream Lick Creek); (x) Tiffin River (downstream Mill Creek to downstream Leatherwood Creek); (y) Tiffin River mainstem (downstream Brush Creek to mouth); and (z) Toussaint Creek.

151. In addition to the foregoing waterbodies, Ohio waters identified in Table E-9 of the 2016 Integrated Report ("Category 5h" waters) continue to be contaminated with PCBs at levels that may not rise to human health impairment. These waters were previously categorized as impaired ("Category 5") but the supporting data is now ten years old or older, so they are categorized as "5h" waters. Table E-9, which is incorporated by reference, includes approximately 350 such waterbodies.

152. Further, PCBs currently contaminate an indeterminate number of other Ohio waterbodies and waterways at levels that have never risen to the impairment threshold, as well as waters for which adequate PCB measures are not currently available, such as aquifers.

153. Like Ohio waters, Ohio soils and air also suffer PCB contamination.

154. Comprehensive data showing aggregate PCB concentrations in Ohio soils and air are not yet available.

155. PCB-contaminated sediments and soils have been the subject of numerous remediation actions taken or overseen by Ohio EPA.

156. For example, in November 2002, Ohio EPA produced a document reflecting its plan to remediate PCB contamination at a Heath, Ohio site of the Rockwell International Corporation (“Decision Document for the Remediation of Rockwell International Corporation, On-Highway Products, Licking County, Ohio”). According to that document, “Actual and threatened releases of ... polychlorinated biphenyls (PCBs) due to past disposal practices at the Rockwell site, if not addressed by implementing the remedial action selected in the Decision Document, constitute a substantial threat to public health or safety and are causing or contributing to air or water pollution or soil contamination.”

157. Surface soil samples collected at the Rockwell site exhibited PCB contamination. Similarly, groundwater from the Rockwell site exhibited PCB contamination.

158. Ohio has invested significant sums in a variety of general and site-specific efforts to assess, investigate, strategize, and implement remediation plans designed to remove PCBs from Ohio waters, soils, and air.

159. Ohio has suffered loss of use of Ohio natural resources, including catching, selling, and/or consuming fish within impaired or contaminated Ohio waters.

V. CAUSES OF ACTION

FIRST CAUSE OF ACTION PUBLIC TRUST DOCTRINE

160. Ohio realleges and incorporates the allegations set forth in paragraphs 1 through 159 as if fully stated herein.

161. Ohio asserts this cause of action in its capacity as trustee of a public trust.

162. Ohio is the trustee of a public trust the corpus of which comprises all public natural resources within the State of Ohio, including all public waters, soils, lands and submerged lands, wildlife, biota, and air.

163. In its capacity as trustee, Ohio holds all public waters, soils, lands and submerged lands, wildlife, biota, and air in trust for the benefit of all Ohioans. Ohio public trust law affords protection to natural resources as far as necessary to accommodate the public uses to which they might be adapted.

164. Defendants manufactured, distributed, marketed, promoted, and sold PCBs in a manner that created hazards to human and environmental health, including the natural resources alleged above, within the State of Ohio.

165. Defendants knew that the PCBs they manufactured, distributed, marketed, promoted, and sold would end up contaminating Ohio's public natural resources,

including waterways, waterbodies, aquifers, groundwater, surface water, soils, sediments, fish and animal tissue, biota, above-ground plants and food crops, and air.

166. Defendants' conduct and the presence of PCBs have resulted in the impairment and/or contamination of Ohio public natural resources, including those natural resources identified hereinabove.

167. Defendants' conduct and the presence of PCBs have resulted in the loss of use of Ohio public natural resources, including those natural resources identified hereinabove.

168. Defendants' conduct and the presence of PCBs have resulted in degradation or elimination of the health, ecological, and other beneficial uses of Ohio public natural resources, including those natural resources identified hereinabove.

169. Defendants' conduct and the presence of PCBs in Ohio public natural resources are injurious to human, animal, and environmental health.

170. Ohio suffered and continues to suffer damage from Defendants' conduct and the presence of PCBs in Ohio public natural resources, including without limitation costs to assess, investigate, monitor, analyze, and remove PCBs that have invaded public natural resources, to prevent PCBs from injuring additional public natural resources, and to restore public natural resources whose use has been lost.

171. As a direct and proximate result of Defendants' conduct, Ohio public natural resources have been contaminated and/or impaired, and their beneficial uses have been degraded or eliminated.

172. As a further direct and proximate result of Defendants' conduct, Ohio, in its capacity as trustee over its public natural resources, has suffered and continues to suffer monetary losses in amounts to be proven at trial.

SECOND CAUSE OF ACTION
DESIGN DEFECT

173. Ohio realleges and incorporates the allegations set forth in paragraphs 1 through 159 as if fully stated herein.

174. Ohio asserts this cause of action pursuant to its inherent *parens patriae* authority to defend a quasi-sovereign interest, and does not here assert or usurp claims on behalf of any individual or non-State entity harmed in his or her person or property by Defendants' conduct.

175. Defendants' PCBs and PCB-containing products were not reasonably safe as designed at the time they left Defendants' control.

176. Defendants' PCBs' toxicity, inability to be contained, and environmental persistence rendered them unreasonably dangerous at all times.

177. Defendants' PCBs were unsafe as designed, as demonstrated by numerous studies alleged hereinabove as well as the U.S. Congress' and U.S. EPA's prohibition on the production and sale of PCBs pursuant to the TSCA in 1979.

178. Due to their toxicity, inability to be contained, and persistence, Defendants knew their PCBs were not safe at the time of manufacture because it was certain that the product would contaminate natural resources within the United States, including Ohio, and cause toxic contamination of Ohio public natural resources.

179. Defendants knew their PCBs were unsafe to an extent beyond that which would be contemplated by an ordinary person because of the information and evidence available to them associating PCB exposure with adverse human and animal health effects as well as the overwhelming seriousness of creating global contamination.

180. Defendants manufactured, distributed, marketed, promoted, and sold PCBs despite such knowledge in order to maximize their profits despite the foreseeable and known harms.

181. Practical and feasible alternative designs capable of reducing the State's injuries were available. Such alternatives include mineral oils and nonfluid insulating chemicals, as evidenced by the rapid replacement of PCBs by such alternatives upon the prohibition of PCBs, as well as alternative chemical formulations and/or additional chemical processing measures Defendants could have taken to enhance the safety of PCBs. Alternative chemical formulations that would have reduced the State's injuries include a reduction of chlorine content in all PCB products, which would have materially decreased the environmental persistence and toxicity of PCBs without eliminating their typical applications or utilities.

182. Defendants' conduct and the presence of PCBs in Ohio caused and continue to cause injury to the physical and economic health and well-being of Ohio citizens.

183. Ohio has suffered and will continue to suffer damages to its public natural resources and public fisc as a result of Defendants' conduct and the presence of PCBs within the State.

THIRD CAUSE OF ACTION
FAILURE TO WARN AND INSTRUCT

184. Ohio realleges and incorporates the allegations set forth in paragraphs 1 through 159 as if fully stated herein.

185. Ohio asserts this cause of action pursuant to its inherent *parens patriae* authority to defend a quasi-sovereign interest, and does not here assert or usurp claims on behalf of any individual or non-State entity harmed in his or her person or property by Defendants' conduct.

186. Defendants' PCBs and PCB-containing products were not reasonably safe at the time they left Defendants' control because they lacked adequate warnings.

187. At the time Defendants manufactured, distributed, marketed, promoted, and sold PCBs, they knew their PCBs were not safe because it was certain that the product would contaminate natural resources within the United States, including Ohio, and cause toxic contamination of Ohio public natural resources.

188. Despite Defendants' knowledge, Defendants failed to provide adequate warnings that their PCBs would contaminate Ohio public natural resources.

189. Defendants could have warned of this certainty but intentionally concealed this information in order to maximize profits.

190. In addition, Defendants advised their commercial customers to dispose of PCBs and PCB wastes in landfills when Defendants knew that this method of disposal would lead to contamination of Ohio public natural resources.

191. Defendants continued to conceal the dangers of PCBs after they manufactured, distributed, marketed, promoted, and sold PCBs.

192. Without adequate warnings or instructions, Defendants' PCBs were unsafe to an extent beyond that which would be contemplated by an ordinary person.

193. Defendants knowingly failed to issue warnings or instructions concerning the dangers of PCBs, their volatilization risks, and proper disposal techniques, in the manner that a reasonably prudent manufacturer would act in the same or similar circumstances.

194. Defendants' conduct and the presence of PCBs in Ohio caused and continue to cause injury to the physical and economic health and well-being of Ohio citizens.

195. Ohio has suffered and will continue to suffer damages to its public natural resources and public fisc as a result of Defendants' conduct and the presence of PCBs within the State.

FOURTH CAUSE OF ACTION
NEGLIGENCE

196. Ohio realleges and incorporates the allegations set forth in paragraphs 1 through 159 as if fully stated herein.

197. Ohio asserts this cause of action pursuant to its inherent *parens patriae* authority to defend a quasi-sovereign interest, and does not here assert or usurp claims on behalf of any individual or non-State entity harmed in his or her person or property by Defendants' conduct.

198. Defendants failed to exercise ordinary care because a reasonably careful company that learned of its product's toxicity, carcinogenicity, harmfulness to humans, and harmfulness to the natural environment would not manufacture or distribute that product, or would warn of its toxic and environmentally hazardous properties, or would take steps to enhance the safety and/or reduce the toxicity and environmental persistence of the product.

199. Defendants failed to exercise ordinary care because a reasonably careful company that learned that its product could not be contained during normal production and use would not continue to manufacture or distribute that product or would warn of its dangers.

200. Defendants failed to exercise ordinary care because a reasonably careful company would not continue to manufacture or distribute PCBs in mass quantities and to the extent that Defendants manufactured and distributed them.

201. Defendants were grossly negligent because they failed to exercise even slight care, placing revenue and profit generation above human and environmental health and safety.

202. Defendants owed the State and its citizens a duty of care in the manufacture, distribution, marketing, promotion, and sale of PCBs because it was foreseeable to Defendants that their PCBs would end up in Ohio's public natural resources, including waterways, waterbodies, aquifers, soils, lands and submerged lands, sediments, fish and animal tissue, above-ground plants and food crops, biota, and air.

203. Defendants' negligent conduct and the presence of PCBs in Ohio caused and continue to cause injury to the physical and economic health and well-being of Ohio citizens.

204. Ohio has suffered and will continue to suffer damages to its public natural resources and public fisc as a result of Defendants' negligent conduct and the presence of PCBs within the State.

FIFTH CAUSE OF ACTION
PUBLIC NUISANCE

205. Ohio realleges and incorporates the allegations set forth in paragraphs 1 through 159 as if fully stated herein.

206. Ohio asserts this cause of action pursuant to its inherent *parens patriae* authority to defend a quasi-sovereign interest, and does not here assert or usurp claims on

behalf of any individual or non-State entity harmed in his or her person or property by Defendants' conduct.

207. Defendants manufactured, distributed, marketed, promoted, and sold PCBs and PCB-containing products in a manner that created or participated in the creation of a public nuisance that is harmful to human and environmental health and obstructs the free use of public natural resources.

208. Defendants intentionally manufactured, distributed, marketed, promoted, and sold PCBs and PCB-containing products with the knowledge that they were causing and would continue to cause environmental contamination of natural resources, including waterways, waterbodies, aquifers, groundwater, lands and submerged lands, soils, sediments, fish and animal tissue, above-ground plants and food crops, biota, and air.

209. Defendants knew that their PCBs would end up in Ohio's public natural resources, including waterways, waterbodies, aquifers, groundwater, lands and submerged lands, soils, sediments, fish and animal tissue, above-ground plants and food crops, biota, and air.

210. Defendants' conduct and the presence of PCBs annoy, injure, and endanger the comfort, repose, health, and safety of others.

211. Defendants' conduct and the presence of PCBs interfere with and obstruct the public's free use and comfortable enjoyment of Ohio public natural resources for commerce, navigation, fishing, recreation, consumption, and aesthetic enjoyment.

212. The presence of PCBs also interferes with the free use of Ohio public natural resources for a healthy environment.

213. Defendants' conduct and the presence of PCBs in Ohio public natural resources are injurious to human, animal, and environmental health.

214. An ordinary person would be reasonably annoyed or disturbed by the presence of toxic PCBs that endanger the health of fish, animals, and humans, and degrade water quality and marine habitats as well as soils and sediments, above-ground plants and food crops, and air within Ohio.

215. The seriousness of the environmental and human health risk far outweighs any social utility of Defendants' conduct in manufacturing, distributing, marketing, promoting, and selling PCBs and concealing the dangers posed to human and environmental health.

216. The rights, interests, and inconvenience to Ohio and the general public far outweighs the rights, interests, and inconvenience to Defendants, who profited heavily from the manufacture, distribution, marketing, promotion, and sale of PCBs, and which can no longer produce PCBs by law.

217. Defendants' conduct caused and continues to cause harm to the State and its citizens.

218. Ohio suffered and continues to suffer damage from Defendants' PCBs, including costs to remove PCBs that have invaded Ohio public natural resources, to

prevent PCBs from injuring additional Ohio public natural resources, and to restore those public natural resources whose use has been lost. The injury to Ohio public natural resources is specially injurious to the State in its proprietary and public capacities, as well as its natural resource trustee capacity.

219. The State is incurring and will continue to incur costs to investigate, monitor, analyze, and remediate PCB contamination in Ohio public natural resources.

220. Defendants knew, or in the exercise of reasonable care should have known, that the manufacture, distribution, marketing, promotion, and sale of PCBs was causing and would cause the type of contamination now found in Ohio public natural resources.

221. Defendants knew that PCBs would contaminate water supplies and waterbodies, degrade marine habitats and endanger fish, birds, and animals, and contaminate soils, sediments, above-ground plants and food crops, and air within Ohio.

222. In addition, Defendants knew or should have known that PCBs are associated with serious illnesses, including liver, thyroid, dermal, and ocular changes, immunological alterations, neurodevelopmental and neurobehavioral changes, reduced birth weight, reproductive toxicity, and cancer, and that humans may be exposed to PCBs through ingestion of contaminated fish or water, breathing contaminated air, and/or dermal contact.

223. As a result, it was foreseeable to Defendants that humans may be exposed to PCBs through, e.g., swimming in contaminated waters, using contaminated beaches, or

eating fish and shellfish from contaminated areas. Defendants thus knew or should have known that PCB contamination would seriously and unreasonably interfere with the ordinary comfort, use, and enjoyment of contaminated waters, soils, plants, food crops, and air.

224. Accordingly, Defendants had a duty to cease manufacturing, distributing, marketing, promoting, and selling PCBs but failed to do so, as alleged above.

225. Defendants also had a duty to warn about the dangers of PCBs but failed to do so, as alleged above.

226. As a direct and proximate result of Defendants' creation of a public nuisance, Ohio has suffered and continues to suffer monetary losses, including loss of value and loss of use of Ohio public natural resources, in amounts to be proven at trial.

SIXTH CAUSE OF ACTION
TRESPASS

227. Ohio realleges and incorporates the allegations set forth in paragraphs 1 through 159 as if fully stated herein.

228. Ohio asserts this cause of action pursuant to its inherent *parens patriae* authority to defend a quasi-sovereign interest, and does not here assert or usurp claims on behalf of any individual or non-State entity harmed in his or her person or property by Defendants' conduct.

229. Defendants' conduct wrongfully caused injury to Ohio public natural resources.

230. Defendants acted intentionally and unreasonably while knowing, or having reason to know, that the State did not give Defendants authorization to act in a manner that would cause injury to Ohio public natural resources.

231. Due to Defendants' wrongful and intentional conduct in introducing PCBs and PCB-containing products into Ohio, which caused injury to the public natural resources of the State, Ohio suffered and will continue to suffer damages.

232. Defendants' wrongful and intentional conduct in introducing PCBs and PCB-containing products into the State was and is the direct factual and legal cause of the injury to Ohio.

SEVENTH CAUSE OF ACTION
UNJUST ENRICHMENT

233. Ohio realleges and incorporates the allegations set forth in paragraphs 1 through 159 as if fully stated herein.

234. Ohio asserts this cause of action on its own behalf.

235. Ohio has incurred and will continue to incur expenses in connection with PCB contamination within the State, including investigative, assessment, and remediation costs.

236. Defendants are responsible for the PCB contamination that Ohio has addressed and will address, and in fairness, Defendants should have paid these costs. It would be unjust for Defendants to retain the benefit of Ohio's expenditures in connection with PCB contamination within the State.

237. Ohio requests an injunction ordering Defendants to return all monies by which Defendants were unjustly enriched as a result of Ohio's expenditures in connection with PCB contamination within the State.

PRAYER FOR RELIEF

Ohio prays for judgment against Defendants, jointly and severally, as follows:

- A. Compensatory damages, in excess of \$25,000, to Ohio according to proof;
- B. Damages for injury to Ohio public natural resources, including the economic impact to the State and its residents and costs to assess, investigate, monitor, analyze, and remove PCBs that have invaded public natural resources, to prevent PCBs from injuring additional public natural resources, and to restore public natural resources whose use has been lost or impaired, on a statewide basis;
- C. Any other damages, including punitive or exemplary damages, as permitted by law;
- D. Award of present and future costs to clean up the PCB contamination complained of herein;
- E. An injunction ordering Defendants to return all monies by which Defendants were unjustly enriched as a result of the State's expenditures in connection with PCB contamination within the State;
- F. Litigation costs and attorneys' fees as permitted by law;

G. Pre-judgment and post-judgment interest on all monies awarded, as permitted by law;

H. Such other and further relief as the Court deems just and proper.

DATED: March 5, 2018

MICHAEL DeWINE
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JURY DEMAND

Ohio respectfully requests trial by jury on all claims so triable.

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