Monsanto

FROM (NAME & LOCATION) R. E. Keller - St. Louis Organic Research - South Second Street

DATE April 17, 1970

SUBJECT ENVIRONMENTAL MATERIALS ANALYZED BY MONSANTO FOR PCB's

REFERENCE

TO : W. B. Papageorge

PERSONAL AND CONFIDENTIAL

cc: J. Mason
H. S. Bergen
J. E. Springgate
R. E. Kelly
E. P. Wheeler
W. R. Richard
M. W. Farrar
E. S. Tucker

This note summarizes work we have done to date on the detection of PCB's in environmental materials. The attached table covers a total of 167 samples which have been analyzed.

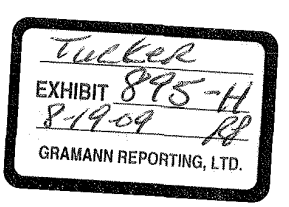
PCB's typical of our Aroclor products have been found in -

- water and sediment from nine US rivers, one UK river and Lake Michigan,
- air (atmospheric, 0.05 mg PCB/cubic meter) at the Anniston plant,
- fish from Lake Michigan and three midwest rivers,
- human fat from a midwest biopsy specimen and
- milk from Maryland and Ohio dairy farms.

The water, sediment and air samples contain PCB's typical of Aroclor 1242, 1248, 1254 and/or 1260. The milk, human fat and fish samples contain PCB's most typical of Aroclor 1254.

REK
R. E. Keller

js

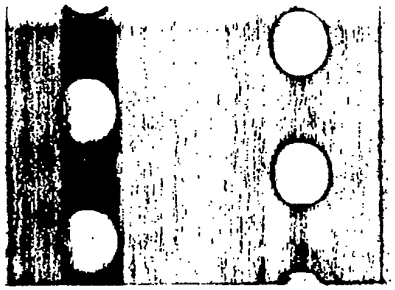


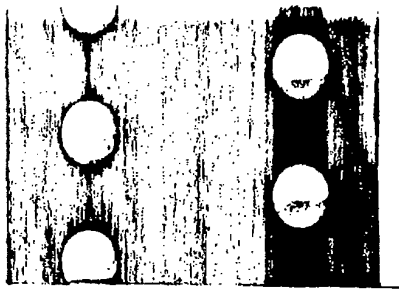
WM 020940

IM 10 REV 11 65

This document is CONFIDENTIAL by order of the U.S. Dist. Ct., S.C. Dist. (Whitfield C.A. #8:84-3184-3) dated 8/1/85.

WATER_PCB-SD0000040963





ENVIRONMENTAL MATERIALS ANALYZED BY MONSANTO FOR PCB's

Industrial

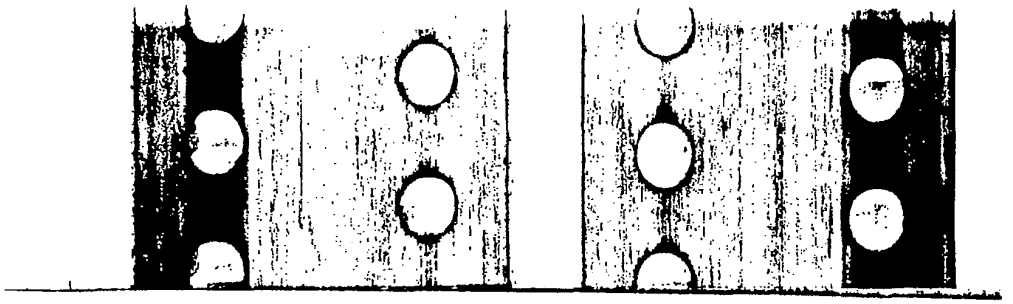
Manufacturer or User and Site Location	Associated Waterway(s)	Matrix and No. of Samples Analyzed		PCB's Found Most Typical of Aroclor 1242	1248	1254	1260	PCB Levels	Analysis Technique
Monsanto, US Anniston, Alabama	Snow Creek	Air	(3)	x				(0.05 mg PCB/cu meter	EC/GC
	Choccolosso Creek	Water	(23)	x	x	x	x	ppb-ppm	EC/GC
		Sediment	(12)	x	x	x	x	ppb-%	EC/GC
		Fish	(2)			x		ppm	EC/GC
Monsanto, US W. G. Krummrich Sauget, Illinois	Mississippi River	Water	(59)	x	x	x	x	ppb-ppm	EC/GC
		Sediment	(12)	x	x	x	x	ppb-%	EC/GC
Monsanto, US Pensacola, Fla.	Escambia River	Water	(7)			x		ppb	EC/GC
		Fish	(1)			x		ppm	EC/GC
Monsanto, UK Newport, England	River Severn (Uskmouth Area)	Sediment	(4)	x				ppb-ppm	EC/GC
National Cash Register Portage, Wisconsin	Fox River Wisconsin River	Water	(12)	x				ppm	EC/GC
General Motors Corp. Central Foundry Div. Bedford, Indiana	For River	Water	(1)	x	x			ppm	EC/GC
Johnson Motors Waukegan, Illinois	Lake Michigan	Water	(4)	x				ppm	EC/GC

WM 020941

This document is CONFIDENTIAL by order of the U.S. Dist. Ct., S.C. Dist. (Whitfield C.A. #8:84-3184-3) dated 8/1/85.

GPFOX00045396

WATER_PCB-SD0000040964



Manufacturer or User and Site Location	Associated Waterway(s)	Matrix and No. of Samples Analyzed	PCB's Found Most Typical of Aroclor 1242	1248	1254	1260	PCB Levels	Analysis Technique
Wisconsin Steel Chicago, Illinois	Chicago Metropolitan Sanitary District Sewer	Water (3)	x				ppm-%	EC/GC
Wheeling Pittsburgh Steel Steubenville, Ohio	Ohio River	Water (1) Sediment (1)	x x				ppm ppb	EC/GC EC/GC
Lester Coating Bedford, Ohio	Storm Sewer	Water (1)	x				ppm	EC/GC
Central Diecasting Chicago, Illinois	Downtown Sanitary Sewer	Water (2)	x				ppb-ppm	EC/GC

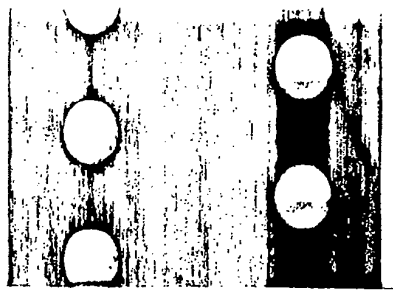
WM 020942

This document is CONFIDENTIAL by order of the U.S. Dist. Ct., S.C. Dist. (Whitfield C.A. #8:84-3184-3) dated 8/1/85.

GPFOX00045397

WATER_PCB-SD0000040965





ENVIRONMENTAL MATERIALS ANALYZED BY MONSANTO FOR PCB's

Non-Industrial Organization Supplying Sample	Location of Sampling Site	Matrix and No. of Samples	1242	1248	1254	1260	Range of PCB Levels	Confirmatory Technique
Wisconsin Alumni Research Foundation Institute, Inc.	Manitowoc River Wisconsin	Fish Composite (1)			x		ppm	EC/GC, GC/Mass
	Kewaunee River Wisconsin	" (1)			x		ppm	EC/GC
	Burns Ditch Lake Michigan	" (1)			x		ppm	EC/GC, GC/Mass
	Manistee River Michigan	" (1)			x		ppm	EC/GC
	Source Unknown	Human fat biopsy sample (1)			x		ppm	
Maryland Cooperative Milk Producers, Inc.	Dairy Farms belonging to Coop.	Milk (5)			x		ppb	EC/GC
		Water (4) (Stream and tank drinking water)					N.D. (<1 ppb)	EC/GC
State of Ohio Department of Agriculture Food, Dairies and Drug Laboratories	Dairy Farms	Silo Scrapings(1)			x		%	EC/GC
		Milk extract (1)			x		ppm	EC/GC, GC/Mass
		Raw Milk (3)			x		ppm	EC/GC

167

WM 020943

This document is CONFIDENTIAL by order of the U.S. Dist. Ct., S.C. Dist. (Whitfield C.A. #8:84-3184-3) dated 8/1/85.

GPFOX00045398

WATER_PCB-SD0000040966

ɔorate Profit ıbed by 1.8% une Quarter

ıcrease Was Smallest 5 Rises in Row; GNP n Revised Downward

L STREET JOURNAL *Staff Reporter*
NGTON—Corporate profits rose in period for the fifth quarter in a he increase from the prior three is also the smallest in five quar- ommerce Department said.
ame time, the department issued ta showing that the nation's econ- slightly more slowly last quarter ially thought. The annual rate of or "real," or inflation-adjusted, onal product was put at 4.3%, the initially reported 4.4%. GNP ure of the nation's total output of services.
ose somewhat more quickly last an initially estimated, according sed figures. As measured by the t's broadest gauge of inflation, at a 5.3% annual rate in the sec- , rather than at the 4.7% clip re- the department last month.
x corporate profits rose $1.4 bil- %, in the June quarter to a sea- usted annual rate of $81.1 billion billion in the first quarter, when ased $5.6 billion, or 7.6% from the e months. Second quarter profits higher, however, than the $61 bil- 's second period. Profit figures quarters were lowered signifi- part of an annual revision of the

ment economists had been expect- down in profits growth in the

ward revision of the second GNP came despite a sharp up- on of the figures for inventory in- All the other major components of adjusted downward, with the big- coming out of federal government

adjustment for inflation, GNP billion in the second quarter, or seasonally adjusted $1.674 trillion . In the first quarter, it rose $46 12.6%, to an adjusted $1.636 tril-

ting inflation, second quarter ed $13.1 billion, or 4.3%, to a on pace from $1.246 trillion in the er when the increase was $27.1 2%.
for GNP and prices could be ll further when the department s data on corporate profits on rge revision in the GNP figures however.

ıcing of Boucher ting Is Delayed

PCBs' Possible Link to Cancer in Humans Is Reported in Study of Mobil Corp. Plant

By a WALL STREET JOURNAL *Staff Reporter*

WASHINGTON — Mobil Corp. has reported what may be the first association of polychlorinated biphenyls, or PCBs, with cancer in humans.

The exposure occurred at Mobil's Paulsboro, N.J., petrochemical plant, where a PCB product made by Monsanto Co. was being used in the plant's operations. PCBs are widely used as heat-transfer agents in electrical equipment.

Details of the cancer cases were reported in a letter from researchers to the New England Journal of Medicine. The National Institute for Occupational Safety and Health immediately asked scientists in the U.S. and elsewhere for any further reports of the chemical's association with cancer in humans.

PCBs have been linked with a variety of less severe human ailments. Workers exposed to high concentrations have developed skin eruptions, eye discharges, swelling of the eyelids and digestive disturbances. Fed to test animals, the chemical has produced liver cancer in rats and mice.

Studies Are Urged

The Mobil study "is very preliminary," said Roscoe Moore Jr., an epidemiologist at the Occupational Health Institute. "It provides a bit of information, but other studies should be pursued," he said. Mr. Moore said the institute already has begun its own research. It will review the death records of workers in New York State who have been exposed to PCBs to determine whether there is an abnormal incidence of cancer. The study will take about two years to complete.

The Mobil study was conducted by Dr. Anita K. Bahn of the University of Pennsylvania School of Medicine. She reported that malignant melanoma, a frequently fatal form of skin cancer, was developed by two of a group of 31 employes heavily exposed to PCBs. One other worker developed melanoma in a group of 41 employes exposed less intensely.

Melanoma is a fairly unusual form of cancer, and the three cases were an unusual number in a small group of workers. Dr. Bahn noted that based on the expected incidence, only 0.04 malignant melanoma would have been anticipated in the group of 31 employes.

Surveillance Advised

"Because early detection of malignant melanoma may markedly affect survival rates, surveillance for melanoma among those exposed should be considered," Dr. Bahn wrote.

The Occupational Health Institute provided additional details in a letter to 1,200 experts in the field. The Mobil study reviewed the health records of two groups of employes who were exposed to PCBs at the Paulsboro plant from 1949 to 1957 and 1953 to 1968. Seven of 92 workers developed cancer. Besides three cases of malignant melonama, two cases of pancreatic cancer occurred. The incidence of these two types of cancer was significantly greater than would be expected normally in a population of that size, noted Dr. John F. Finklea, institute director. Neither melanoma nor pancreatic cancer previously was associated with occupational exposure to a chemical, experts said.

The PCB product involved was Aroclor 1254, manufactured by Monsanto, the largest producer in the U.S.

Cousins Properties Has Option to Repurchase Note at Reduced Price

By a WALL STREET JOURNAL *Staff Reporter*

ATLANTA—Cousins Properties Inc. said one of its major investors, the Ford Foundation, has given the company an option to repurchase a $22.5 million note for $12 million until Oct. 21, or for $15,750,000 from then until Dec. 31.

But the company, which also reported its first half loss grew to $6.6 million this year from $1.1 million last year, said it couldn't give any assurance as to whether it will be in a position to exercise the option.

The repurchase option on the subordinated unsecured note, it said, includes accrued interest and related warrants for the purchase of 281,250 common shares of Cousins Properties.

Meanwhile, the company said, Ford Foundation has given it waivers extending until Oct. 15 covering certain events of default with respect to the note. A spokesman declined to specify the events of default. He did say the note was issued in July 1974, matures in July 1986 and carries an interest rate of 9½%.

The real estate development company said it had an operating loss in the six months ended June 30 this year of $9.1 mil-

New England Electric Says Unit Seeks License To Build Nuclear Plant

By a WALL STREET JOURNAL *Staff Reporter*

WESTBORO, Mass.—New England Electric System said its New England Power Co. subsidiary has applied to the Nuclear Regulatory Commission for a license to build a two-unit nuclear power plant in Charlestown, R.I., at a projected cost of $1.7 billion.

New England Power would own a majority interest in the plant, while about 30 private and municipal New England utilities would own smaller shares.

Each of two pressurized water reactors would have an electrical capacity of about 1.2 million kilowatts, the utility said. The project is currently scheduled to be completed by 1986.

Texas Agency Orders Maximum Oil Output From State's Fields

Special to THE WALL STREET JOURNAL

MCA Inc. to Bo Minorities in Fie Of Entertainmen

* * *

Concern's New Venture To Get $3 Million Ba Matching Aid Fron

By a WALL STREET JOURNAL *Staff*

UNIVERSAL CITY, Calif.—S the entertainment conglomerate, lishing a new subsidiary, MCA tures Inc., as a minority enterpr business investment company, to ther the entertainment industry t ities," including blacks and wome

MCA's president, Sid Sheinberg company will be started with $3 MCA financing. This will be ma tially by $3 million from the Smal Administration. Mr. Sheinberg sai

MCA New Ventures is the ente industry's first minority enterpr business investment company to and the largest of the more than 8 so far by the Small Business Admi New Ventures will operate solely financing and financial managem tance to small minority-owned involved in motion pictures, recor sion or other entertainment-relat said Norbert A. Simmons, general of MCA New Ventures.

Elliott Witt, chairman of MCA tures, said he believes that blacks minorities such as Mexican Amer Puerto Ricans "have never reall cess to the studios. We don't think gram is a panacea, but we think the next several years, it'll enhan trance of many minority persons mainstream of the entertainment

The leveraging formula for suc nies is based on the Small Busines istration's purchase of the prefer and-or debentures of up to an amo to four times the amount of paid-i So the $3 million invested by MCA result in about $15 million being the companies of disadvantaged entrepreneurs in entertainment an industries, Mr. Witt said. The SB gin with $3 million.

Asked if he thought the new would provide many new opportu minorities in the entertainment fi ing black actor James Earl Jones needed. It's worth a try. But we'l see the results.

"The only way that it can ope opportunities is if the new venture a movie that's very successful," added.

MCA's Mr. Witt said that the pany will finance only "economic ble" pictures.

Facet's Filter Unit Plan $5 Million Facility in Ut

TULSA—Facet Enterprises Inc. Campbell Filter Co. unit will build llion automotive filter plant and di

This document is CONFIDENTIAL by order of the U.S. Dist. Ct., S.C. Dist. (Whitfield C.A. #8:84-3184-3) dated 8/1/85.

fast," pleaded one truck driver. "No, but you were going too loud," said the cop. Another trucker argued: "Our firm has 45 trucks. Do you mean that we've got to put new mufflers on all of them?" Replied the officer with quiet dedication: "Now you're getting the idea."

The Menace of PCB

Environmentalists were confident that they had ferreted out the nation's major pollutants after they put the finger on substances like DDT, mercury, lead and phosphates. Now an important newcomer has cropped up in the form of polychlorinated biphenyls (PCBs), colorless, odorless, syrupy chemicals that are manufactured in the U.S. under the trade name Aroclor by the Monsanto Co. Until recently, PCBs were used in industry in many ways, for instance as softeners in plastics, paints and rubber, as additives in printing inks and papers. Although they are now used primarily as agents in heat exchangers, there is growing evidence that alarming quantities of PCBs have found their way into living organisms and that they pose a potent new threat to the environment.

Two years ago, New York Democratic Congressman William F. Ryan was told by a constituent about the dangers of PCB. Checking further, Ryan found studies showing that large amounts of PCBs had been discovered in the fish and sea birds of several countries. The studies also revealed that the compounds can cause liver damage in mice and disrupt the calcium metabolism of birds, which then lay thin-shelled eggs. Alarmed by the findings, Ryan delivered a House speech on PCBs. The Department of Agrioulture responded by halting the use of PCBs—but only in pesticides. Then, despite complaints from customers, Monsanto announced that, as of September 1970, it would stop sales of PCBs except for "absolutely essential" use in electrical equipment.

Polluted Poultry. To the public, however, PCB was still largely unknown —until the disclosure, in December 1970, that Campbell Soup had found high PCB levels in some New York State chickens destined for its products. Once notified, the New York and federal departments of agriculture stopped poultry shipments from the three counties supplying Campbell and ordered the burial of 146,000 contaminated birds. Where did the PCB come from? Officials speculated that it had been transmitted by chicken feed made from stale bakery goods that had been wrapped in PCB-coated plastic bags.

One of the worst instances of PCB pollution occurred last spring. A North Carolina poultry raiser, worried over the low hatching rate of his chickens, ran independent tests and found that the fatty tissue of the birds contained up to 40 p.p.m. of PCBs (the federal limit for poultry is 5 p.p.m.). The contamination was traced to a Wilmington, N.C., fish-meal plant where PCBs were leaking from a pipe in a heating system into the meal. Officials were dismayed to learn that the leak had gone undiscovered for nearly two months and that 13,000 tons of tainted feed had been sent to 64 customers in twelve Southern and Midwestern states.

Ryan was furious. "The Federal Government's actions are inexcusable," he said. "This entire incident could have been prevented if the Department of Agriculture and the Food and Drug Administration had lived up to their responsibilities to protect the public." He then introduced legislation that would totally ban PCBs from interstate commerce.

Official Goof. Still, evidence of PCB pollution continued to crop up, probably because markets were already saturated with PCB products. In mid-August, FDA disclosed that it had seized more than 75,000 fresh eggs from wholesalers in Norfolk, Va., because the chickens that laid them had eaten feed containing the tainted fish meal. Though the agency assured the public that no tainted food would leak out, it later admitted an official goof: a shipment of 60,000 eggs had somehow got through federal inspectors and, presumably, into the stomachs of Washington, D.C., residents.

Two weeks ago, the Department of Agriculture announced that "unacceptable levels of the poison PCB" had been found in turkeys processed by a Minnesota subsidiary of Swift & Co. About 50,000 birds were voluntarily withheld from the market while agriculture experts searched for the source of the contamination. Around the same time, Michigan Governor William Milliken ordered a halt to the commercial sale of coho salmon after PCB was found in salmon taken from Lake Michigan. Last week FDA disclosed that PCBs had also been found in several different kinds of dried foods, including baby cereals and shredded wheat. The PCB source has been traced to the cardboard packaging material, which was made partly of recycled PCB-treated copying paper.

PCBs are difficult to cope with for a number of reasons, first of all because the chemicals are hard to identify. They so closely resemble DDT they can be differentiated only by spectrographic analysis. PCBs are long-lived and, like DDT, their potency is multiplied as they work their way up the food chain. Unlike DDT, however, these chemicals are not sprayed but get into the environment accidentally, which makes them even harder to trace and control.

For all the grim warning signs, there is as yet no proof that PCBs at present low levels are harmful to humans. Most scientists, and critics like Congressman Ryan, however, feel that the safest course is to treat PCBs just as though they were the most potent of pollutants, until tests determine exactly what the long-term effects may be.

WM 020539

This document is CONFIDENTIAL by order of the U.S. Dist. Ct., S.C. Dist. (Whitfield C.A. #8:84-3184-3) dated 8/1/85.

GPFOX00045400

WATER_PCB-SD0000040968