Final Draft
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OBJECTIVES

1. Progress report on laboratory biodegradation of PCBs.

2. Residue accumulation studies in fish, birds and mammals.

3. To show reduction in less biodegradable PCBs as a result of Monsanto actions on sales and products.

PLAINTIFF'S EXHIBIT 1438-F

MONSANTO PCB ACTIONS

1. Phase-out of PCB sales worldwide in all applications except Dielectrics.

2. Conversion of Dielectric Fluids to more biodegradable PCBs.

DEGREE OF BIODEGRADATION OF PCBs

Based on data presented:

- Transition in biodegradation occurs around penta-/hexa-chlorobiphenyl.
- Disappearance of all homologs below hexa-chlorobiphenyl observed.
- Penta- and higher PCB determined by specific GLC/MS Test Method.

MONSANTO PCB SALES IN U.S.A.

(Million Pounds)

	Dielectrics	All Others	Total
1969	37.0	30.0	67.0
1970	40.5	33.5	74.0
1972 (Est.)	32.0	-	32.0

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EFFECT OF PHASE-OUT POLICY

PCB sales reduced in U. S. A. by

30 to 33 million pounds,

or 45%.

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PCB PRODUCT CHANGES IN DIELECTRICS

CAPACITORS

97% conversion to Aroclor 1016

TRANSFORMERS

Elimination of Aroclor 1260

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PCBs USED IN CAPACITORS

PCB	Major Use Period	% PCB (Penta-chloro- and Higher	% PCB (Hexa-chloro- and Higher
Aroclor 1254	1930-1952	77.0	23.0
Aroclor 1242	1952-Sept. 1971	9.0	1.0
Aroclor 1016	Oct. 1971-	1.0	0.01

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Capacitor Fluids

Why Convert to Aroclor 1016?

1. 9-fold reduction in PCBs of pentachloro- and higher.
2. 100-fold reduction in PCBs of hexachloro- and higher.
3. Minimum industry testing required.

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Capacitor Fluids

What Is The Effect of Aroclor 1016?

U.S. Capacitor Fluid Sales (1972):~ 20 M lbs.

If Aroclor Was	% Pentachloro- and higher PCBs Would Be*	% Hexa chloro- and Higher PCBs Would Be*
1254	15,400,000 pounds	4,600,000 pounds
1242	1,800,000	200,000
1016	200,000*	2,000

*This does not mean amounts of PCB entering the environment.

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WHAT IS CAPACITOR FAILURE RATE?

Industry Sources Cite : 0.02-0.2% Per Year

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IF CAPACITOR FAILURE RATE IS 0.2% PER YEAR
(WORST CASE)

PCB ESCAPE TO ENVIRONMENT* IS --

	Aroclor 1242	Aroclor 1016
All PCB Homologs	40,000 pounds	40,000 pounds
Penta Chloro- and higher	3,600	400
Hexa Chloro- and higher	400	4

*Assumes U.S. Fluid Sales of 20 M Lb./Year

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PCBs PRESENT IN ASKAREL TRANSFORMER FLUIDS

	% PCBs Pentachloro- and Higher	% PCBs Hexachloro- and Higher	Major Use Period
Aroclor 1260	100	70	1930-1972
Aroclor 1254	77	23	1969-
Aroclor 1242	9	1	1968-

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PCB CHANGES IN TRANSFORMER FLUID APPLICATIONS

1. Aroclor 1260 being phased out now.
2. Aroclor 1016 cannot be used.
3. Incineration of scrap PCBs - 1971.

Note: Askarel (PCB) transformers are tightly sealed units.

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WHAT IS FAILURE RATE IN LIQUID TRANSFORMERS?

Industry sources cite: Under 0.2% per year*

* All liquid types - mineral oil and PCB. PCB failure could be less since they are inherently safer.

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IF ASKAREL (PCB) TRANSFORMERS FAIL AT 0.2%/YEAR

HOW MUCH PCB IS AFFECTED*?

	Aroclor 1254	Aroclor 1242
All PCB Homologs	24,000 lbs.	24,000 lbs.
Penta Chloro-and Higher	18,480	2,160
Hexa Chloro-and Higher	5,520	240

(Estimated PCB transformer fluid sales in U.S. 12 M lb./year)

* With incineration facilities available, not all these amounts will enter environment.

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Monsanto's Present Program To Prevent Environmental Pollution By PCBs

1. No more sales world-wide except approved dielectric users.
2. Restrict over 97% capacitor fluid sales to Aroclor 1016 only.
3. Restrict PCBs in transformer fluids to Aroclor 1254 and 1242.
4. Continue incineration facilities for scrap PCBs.
5. Encourage dielectric industry through ANSI C-107 to enforce strict environmental control over PCBs.

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