NON-CONTROLLABLE END USES (PLASTICIZERS)

1. Terminated on August 30, 1970.

2. No serious problems as yet. Some uneasiness by customers regarding chlorinated terphenyls.

3. Sales to-date slow, but attributed to high inventories accumulated prior to August 30.

HYDRAULIC APPLICATIONS

1. All Pydrauls have been reformulated tested and Factory Mutual approved. Raw materials (phosphate esters and terphenyls) are available. Shipments are being made.

2. Aroclor 1242 is still present in two fluids used in gas transmission (closed) systems.

   MCS-974

   Turbinol 153

   Plan to try MCS-1016 when available.

3. Competition is aggressive, implying to customers our material causes serious pollution problems. No large accounts threatened as yet.

TRANSFORMERS AND CAPACITORS

1. Excellent progress. Customers are responding. Economic situation has influenced capability of smaller customers to take quicker action.

2. American National Standards Institute is proceeding with committee to provide guidance to the industry.

3. Disposal of solids contaminated with PCB's still a major problem. Customers are looking to Monsanto for answers.

4. Field work active on incinerator and MCS-1016 projects. Both are on target and scheduled for start-up by June 1, 1971.

5. Awaiting approval of MCS-1016 by customers.

HEAT TRANSFER

1. Phased out of sales to food applications.

2. Non-PCB products are replacing PCB types in over 50% of cases where fire resistance is not critical.

3. Customer response is excellent.

4. Met year-end target, but education etc. is continuing program.

NCR

1. NCR phasing out of Aroclor 1242 using MIPB made at Queeny Plant.

2. Dixie Chemical starts distillation on March 8th. First tank car move scheduled for March 10 to Wisconsin.

3. If no unforeseen difficulties are encountered, shipment of Aroclor 1242 should cease on March 10.

4. We will beat May 1 target date by one month.

INTERNATIONAL

1. U.K. following U.S. plan. Phased out of non-controllable uses on March 1. NCR substitution was completed in July 1970. Using Dalton for reclaiming. Purle Brothers for incineration.

2. Continental Europe - Norway and Sweden are planning ban and licensing. Germany is becoming more concerned. We are working with European producers to follow our plan. Targeting for year-end.

3. ROW - Will follow European plan.

4. Japan - Considerable interest being generated. Kanegafuchi beginning to express interest. MMK attempting to influence Kanegafuchi to develop plan.

TOXICITY STUDIES

1. Long term animal feeding studies continue. Will terminate July 1, 1971.

2. Results at 18-months indicate no change from 6 and 12-months.

3. Teratology studies started using rats on Aroclor 1242, Aroclor 1254 and Aroclor 1260.

CHICKENS - NEW YORK STATE

1. Our laboratory analyzed samples submitted by Agway Laboratories, Inc. and found PCB levels as follows (expressed as Aroclor 1248):

Chicken Feed	.1 - .2 ppm	(3.2 - 3.6 ppm lipid wt.)
Chicken Tissue	.3 - .155 ppm	(6 - 30 ppm lipid wt.)
Eggs	.18 - .23 ppm	(4.8 ppm lipid wt.)
Bakery Meal	.478 ppm	

Bakery meal is used in chicken feed up to 10%. This ingredient is suspected source of PCB.

2. Agway Laboratories found the following:

Eggs	.19 - .23 ppm	(3.64 - 4.86 ppm lipid wt.)
Bakery Meal	.5 ppm	

3. Agway is sponsoring chicken feeding studies at Cornell University using 0, 0.5, 1.0, 10 and 20 ppm Aroclor 1248. Will determine effect on adult bird and reproduction. Plan to also determine time it takes to lower PCB in bird tissue after it is removed from contaminated feed. Promised to share data with us.

4. John Razonski Co. supplier of bakery meal has had samples analyzed by Eastern Research Associates. All material, which includes bread crumbs, cookies, crackers, flour, spaghetti, corn meal, cake mix, contains PCB (.3 - .8 ppm).

5. We have not been able to determine the source of PCB in the bakery meal. Recycled paper is suspected, however, many of the ingredients analyzed were not exposed to paper.

MONS 037754

6. Agway Laboratories also detected low levels .1 - .3 ppm PCB's in oyster shells used as a "topping" in chicken feed.

TURKEYS - WEST COAST

1. Dr. W. Lehrer, Director of Research, Carnation Company, Los Angeles, California is conducting extensive analysis program to determine source of PCB found in turkets up to 50 ppm level in fatty tissue. No results yet from his laboratory.

2. 100,000 pounds of turkey are being held in freezers in San Francisco area.

3. Dr. Lehrer is suspicious of a "wood molasses" sold by Masonite Company as Mason-X. This material apparently has no fodd value, but is used as a binder in forming food pellets.

3/4/71

CHLORINATED TERPHENYLS - PLASTICIZER APPLICATIONS

PRODUCT	1970 ACTUAL (Pounds)	1971 PREDICTED (Pounds)
Aroclor 5460	9,889,000	16,606,000
Aroclor 4465	374,000	-
Aroclor 5060	438,000	616,000
Aroclor 5432	5,960	500,000
Aroclor 5442	99,000	701,000
TOTALS	10,805,960	18,423,000

3/4/71

CHLORINATED TERPHENYLS - HYDRAULIC FLUIDS APPLICATIONS

PRODUCT	1970 Actual (Pounds)	1971 PREDICTED (Pounds)
Aroclor 5432	121,125	4,424,000
Aroclor 5442	99,235	885,000
TOTALS	220,360	5,309,000

3/4/71

TURBINOL 153 SALES

1970 ACTUAL (Pounds)	1971 PREDICTED (Pounds)
333,000	400,000

3/4/71

HEAT TRANSFER FLUIDS

PRODUCT	1970 ACTUAL (Pounds)	1971 PREDICTED (Pounds)
Therminol FR-0	55,000	167,000
Therminol FR-Lo Temp	58,800	123,000
Therminol FR-1	2,607,700	3,495,000
Therminol FR-2	726,000	-
Therminol FR-e	171,000	144,000
TOTALS (PCB Types)	3,618,500	3,929,000
Therminol 55	381,000	1,888,000
Therminol 66 (HB-40)	1,051,000	1,399,000

3/4/71

NCR APPLICATION

AROCLOR 1242 VS. MIPB

	POUNDS	SELLING PRICE ($/#)	$ SALES	GROSS PROFIT
AROCLOR 1242 (1970 Actual)	6.699 M	.1525	1.021 M	$ 387 M
MIPB (1971 Predicted)	3.8 M	.38	1.44 M	$ 256 M
AROCLOR 1242 (1971 To date Actual)	1.2 M	.1529	0.182 M	$ 70 M

MONS 037761

3/4/71

BULK PRICE INCREASE SUMMARY

PRODUCT	FROM ($1 lb.)	TO ($1 lb.)	EFFECTIVE DATE
Aroclor 1221	.1495	.1595	July 1, 1970
Aroclor 1232	.1595	.180	Jan. 1, 1971
Aroclor 1242			
Aroclor 1248			
Aroclor 1254			
Aroclor 1260			
Pyranol A13B3B	.157	.160	Jan. 1, 1970
Inerteen PPO	.160	.167	July 1, 1970
Inerteen 70-30	.167	.187	Jan. 1, 1971
Inerteen 54201CM	.1345	.1445	July 1, 1970
	.1445	.1650	Jan. 1, 1971
Inerteen 100-42	.1795	.1895	July 1, 1970
	.1895	.210	Jan. 1, 1971
Inerteen 54201 KA	.140	.147	July 1, 1970
	.147	.167	Jan. 1, 1971
Inerteen 54201 A6	.168	.175	July 1, 1970
	.175	.195	Jan. 1, 1971
Therminol - 0	.27	.30	Dec. 1, 1970
Therminol - Lo Temp			

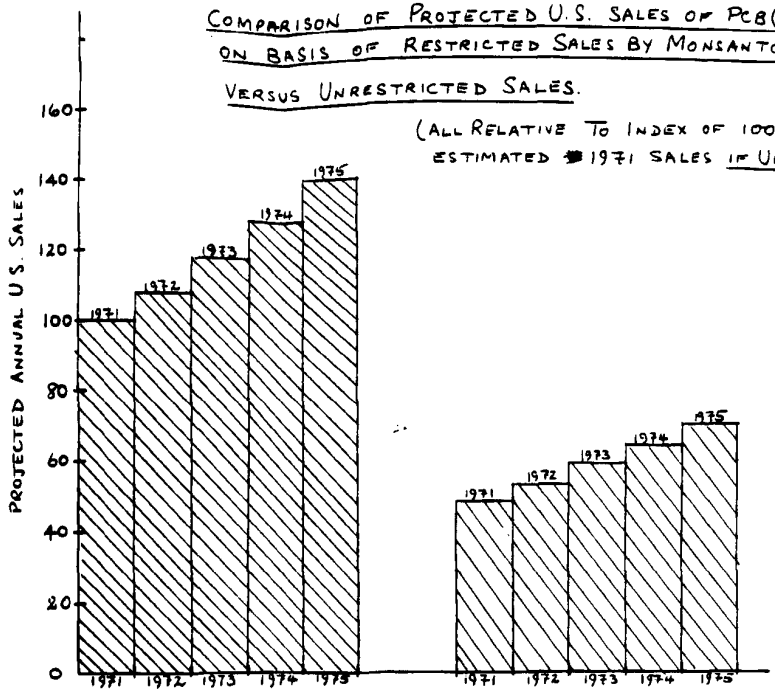
MONS 037762

BULK PRICE INCREASE SUMMARY

PRODUCT	FROM ($ 1 lb.)	TO ($1 lb.)	EFFECTIVE DATE
Therminol FR-1 Therminol FR-2 Therminol FR-3	.25	.28	Dec. 1, 1970
Aroclor 1268 Aroclor 4465 Aroclor 5460 Aroclor 5442	.19	.20	October 1, 1970
Aroclor 5060	.18	.19	October 1, 1970
HB-40 (NCR-UK)	.20	.23	Feb. 1, 1971
HB-40 (Plasticizer)	.16	.19	March 1, 1971
HB-40 (Reactor Grade)	.20	.23	March 1, 1971

Comparison of Projected U.S. Sales of PCB (All Uses) on Basis of Restricted Sales By Monsanto Versus Unrestricted Sales.

(All Relative To Index of 100 For Estimated [redacted] 1971 Sales If Unrestricted)



Unrestricted Sales (All PCBs / All Uses)

Projected U.S. PCB Sales (1971-1975).

[redacted] 12.5 Times Actual 1971 Level.

Restricted Sales Now In Effect By Monsanto

8 Times 1971 Level

MONS 037764

U.S. SALES BY PCB PRODUCT TYPE

	1969	1972*
Aroclor 1016	0%	68%
Aroclor 1242	70	13
Aroclor 1254	14	16
Aroclor 1260	7	2
Other PCB	9	1

*1972 U.S. PCB Sales Projected at only 61% [illegible].

This chart may be of use in relation to Charts, [illegible] Biodegradation/Feeding Studies.

U.S. SALES OF PCBs (ALL USES)

Chlorobiphenyl Component	1969	1972*
2-	9%	14%
3-	21	31
4-	26	34
5- to 9-	44	21

*1972 sales are only 61% of 1969 sales.

BIPHENYL/TERPHENYL FAMILY

1. DIELECTRIC PCBs
2. AROCLOR 5432 (PYDRAUL)
3. AROCLOR 5432 (PLASTICIZER)
4. AROCLOR 5460 (PLASTICIZER)
5. HB-40
6. THERMINOL 66
7. MCB (DOW)
8. AROCLOR 1221/MCS 1109 (DYE CARRIER)
9. AROCLOR 1221/MCS 1109 (PLASTICIZER)
10. HC-40 (PLASTICIZER)
11. THERMINOL FR-1
12. BIPHENYL
13. SANTOVAC
14. TURBINOL 153

DEFINITION

PCB - BIPHENYL CHLORINATED TO DI- AND HIGHER CHLORO DERIVATIVES

INCLUDES AROCLOR 1221
EXCLUDES MONOCHLOROBIPHENYL (MCB)

PCB-CONTAINING PRODUCTS
SOLD OR USED AS INTERMEDIATES BY MONSANTO

"PERSISTENT" PCB

Aroclor 1232
Aroclor 1242/Santovac 1
Aroclor 1248/Santovac 2
Aroclor 1254
Aroclor 1260

"NON-PERSISTENT" PCB

Aroclor 1221 → Straight Sale
→ Plasticizer Blends

PCB-CONTAMINATED PRODUCTS

MCS 1109

Aroclor 5432 → Straight Sales
→ Plasticizer Blends
Aroclor 5460 → Hydraulic Fluid Blends

CURRENT PCB LEVELS IN MONSANTO PRODUCTS

Aroclor 5432/5460	: 1% PCB
MCS 1109	: 1%
Aroclor 1221	: 25%
Aroclor 1232, 1242, 1248, 1254, 1260	: 100%

ANNUAL RATE OF PCB SALES (U.S.A.)
NON-DIELECTRIC USES

Includes: 100% PCBs
PCB in Aroclor 1221
PCB in Chlorinated Terphenyls
PCB in MCS 1109

DATE	HYDRAULIC FLUIDS	PLASTICIZERS	CARBONLESS CARBON PAPER	DYE CARRIER	HEAT TRANSFER	TOTA
	M lb.	M lb.	M lb.	M lb.	M lb.	M lb
12/31/69	8	~12	~7	0	3	30
12/31/70	7	0.5-0.6	0	0.25	3.9	11.7
9/1/71	0.4	0.5-0.6	0	0.25	2.8	4.1
11/1/71	0.4	0.15	0	0.01	2.0	2.7
3/1/72	0.3	0.03	0	0.01	1.0	1.3
12/31/72	0.3	0.015	0	0.007	0.7	1.0

1.

PCB SALES (USA)
ALL NON-DIELECTRIC USES
(Includes PCB Contaminants)

DATE	ANNUAL RATE (M LB.)	% 12/31/69 RATE
Dec.'69	30.0	-
Dec.'70	11.7	39.0
Sept.'71	4.1	13.7
Nov.'71	2.7	8.7
March'72	1.34	4.6
Dec.'72	1.02	3.4

NON-DIELECTRIC USES INCLUDE HEAT TRANSFER

Effective August, 1971, NO PCB Fluids

Sold For:

1. Processes Related to Food Chain
2. New Heat Transfer Systems
3. Any Other System As Top-Up Unless Business Group Approved

PCB SALES (USA)
EXCLUDING: CLOSED SYSTEMS
INCLUDING: PCB CONTAMINANTS

DATE	ANNUAL RATE (M lb.)	PERCENT OF DEC. 1969 RATE
Dec. 1969	27.0	-
Dec. 1970	8.0	30.0
Sept. 1971	0.9	3.3
Nov. 1971	0.24	0.9
Mar. 1972	0.04	0.15
Dec. 1972	0.02	0.08

PCB SALES (USA)

EXCLUDE - CLOSED SYSTEMS

INCLUDE - PCB CONTAMINANTS

RATE OF SALES AT	YEARS TO ACCUMULATE TOTAL EQUAL TO 1969 SALES
Dec. 1970	3.3
Sept. 1971	30
Nov. 1971	112
March 1972	670
Dec. 1972	1350

CHLORINATED BI- AND TERPHENYLS

BUSINESS GROUP PLAN

MANUFACTURING

1. Reduce Biphenyl Level in Terphenyl to 0.04%
2. Reduce PCB in Aroclor 5432/5460 From 1% to 0.05%
3. New Warning Labels