

Monsanto

CONFIDENTIAL

D. Danna - General Offices

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CLASS "C" DATA
BIPHENYL AND AROCLORS

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TO : Dr. J. R. Durland
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The attached packet of data constitutes Class "C" type information on the manufacture of Biphenyl and Aroclors. Usually this data is extracted from the current Standard Manufacturing Process Manuals, selecting only pertinent information based on the existing scale equipment. Since your needs (volume, etc.) were known to us, we had requested our process engineers (OPED) to give us a scaled-down estimate of the capital requirements for a plant sized for your market. With this battery limit estimated capital (a usual $\pm 30\%$ type estimate) on hand, I felt the operating factors pertinent to this smaller unit would be of help to you. Exhibit A contains detailed factors which should be of help to you with your preliminary economic evaluation. Also, attached are sections extracted from the current Standard Manufacturing Process Manuals, such as:

1. Process Descriptions
2. Flow Sheets
3. Finished goods and raw material specs.

The throughput rates and material of construction data usually included in this type transmittal seems irrelevant at this time -- also, avoids confusion.

If your preliminary economic evaluation indicates a viable project, our engineering group will be asked to firm-up their estimate supplying your people with equipment lists, pertinent flow diagrams, etc. sufficiently accurate for an appropriation grade capital estimate.

If you need more information, please let me know.

*Best Regards,
Danna*

Dominic Danna

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DSW 200809

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JAPAN AROCLOR PROJECTOPERATING FACTORS

	<u>Biphenyl</u>	<u>Aroclors</u>
Estimate M&E Capital	\$600,000	\$600,000
Calc. Capacities - #/yr.	5.5M	10.00M

I. Labor and Supervision

No. Shift Operators	4	8
No. Day Operators	<u>1</u>	<u>1</u>
Total Operators & Laborers	5	9
No. Foremen	1/2	1/2
No. Supervisors	1/2	1/2
No. TSD Engineers	1/4	1/4
No. Supt. (% of 1)	<u>20%</u>	<u>20%</u>
Total Salary Head Count	1.45	1.45

II. Raw Material Usages (#/CWT)

	<u>Biphenyl</u>	<u>Aroclor 1242</u>	<u>Aroclor 1254</u>
Benzene	117.00	--	--
Acetone	0.75	--	--
Terphenyls*	13.2	--	--
Biphenyl	--	61.02	49.01
Chlorine	--	90.32	116.13
Att. Clay	--	0.150	0.15
Lime	--	0.200	0.20
Ferric Chloride	--	0.030	0.03
Nitrogen	--	0.170	0.17
HCl - 80% Rec.*	--	34.54	44.41

*Credit

III. Utilities and Services (U/CWT)

	<u>Biphenyl</u>	<u>Aroclors</u>
Steam - M#	0.087	0.16
Elec. - CKWH	0.047	0.02
Comp. Air-MCF	-	0.22
Water P-M Gal.	0.109	0.13
Water C-M Gal.	2.509	-
Fuel Gas - M BTU	1.564	0.058
Laboratory Hours	0.0064	0.01