



E. I. DU PONT DE NEMOURS & COMPANY

INCORPORATED

WILMINGTON, DELAWARE 19898

CHEMICALS AND PIGMENTS DEPARTMENT
JACKSON LABORATORY

cc: J. G. Ishikawa, B-16234
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September 23, 1981

To: A. W. Bauer, B-16235

From: R. S. Weis *RSW*

1981 ANNUAL REPORT

Attached are R&D Activities and Objectives and
Major Cost Containment Programs for Aromatics and Colored
Pigments.

RSW:gmd
Att.

N 26946

1981 ANNUAL REPORT

R&D ACTIVITIES AND OBJECTIVES

Aromatics

Annualized savings of \$5.3MM (2.9% of factory cost) resulted from the continuation of a vigorous cost reduction program. In addition, support for start-up of major projects for phthaloyl chlorides, 4,4'-oxydianiline, and 3,4-dichloroaniline (which involves new reactor technology) was provided. Manufacture of mono and diethylaniline was reinstituted with a new, more economical, safe process. In 1982 cost reduction effort will continue with an annualized commitment of \$3.9MM (2% of factory cost). Support will be given for a new major market for phthaloyl chlorides in polyarylates manufacture.

Specialty Chemicals

Technical accomplishments in 1981 include the successful expansion of "Tyzor" titanates to meet the demands for oil well treatment chemicals and support for fluorochemical expansion to meet the needs for the newly-developed threadline application. In 1982 support will focus on continued expansion of "Tyzor" titanates and Alsyl products, both needed for oil well stimulation and the fluorochemicals expansion program. Pilot plant activity will provide basic data for "Tyzor" and Alsyls expansions which will quintuple and quadruple capacities, respectively.

<u>Benefit Group</u>	<u>Principal Program</u>
Cost Reduction	● Described in Cost Containment and Productivity exhibit
Product Improvement	● Phthaloyl Chlorides for GE
Capacity Increase	● New Process - Oxydianiline
Regulatory Work	● None

S. C. Doberstein:jla
Sept. 21, 1981

N 26946.01

COST CONTAINMENT

Aromatic Products

Our cost reduction commitment in 1982 is \$3.9MM (2.0% of factory cost) from a potential of \$5.9MM, due to improved yield, reduced materials, and energy savings. Major emphasis is in nitration and reduction processes with major savings in 3,4-dichloroaniline (\$1.7MM), nitrotoluenes and nitrochlorobenzenes (\$1.2MM), and phenylenediamines (\$500M). Savings in 1981 were \$5.3MM (2.9% of factory cost).

S. C. Doberstein:jla
Sept. 21, 1981

N 26946.02

AROMATIC PRODUCTS

MAJOR COST CONTAINMENT PROGRAMS

Forecast Pretax Savings Incentive							Investment	
1982 Manpower	Cumulative 1982-1986 (\$MM) *	First Year	Continuing		% Factory Cost	\$MM	Year	On Constructio Forecast?
			\$MM/Year					
<u>3,4-Dichloroaniline</u>								
• Improve Materials Utilization	1.6	5.4	1982	0.7	3.1	0.3	1982	Yes (small proj.)
<u>Nitrotoluenes</u>								
• Improve Yield/ Reduce Energy	1.0	8.6	1983	1.3	3.0	0.4	1982	Yes
						0.5	1983	No
<u>Nitrochlorobenzenes</u>								
• Improve Materials Utilization- 4,4'-ODA	3.0	7.8	1982	1.0	14	0.1	1982	Yes (small proj.)
<u>Phenylenediamines</u>								
• Improve Isomer Ratio and Reduce Dinitro Formation-MNCB	0.5	2.2	1982	0.5	~ 2.5	None		
• Improve Materials Utilization	1.6	6.2	1982	1.4	~ 3.0	None		
• Reduce Energy Consumption	0.7 } Phase 1 0.7 } Phase 2	2.0 1.6	1982 1983	0.4 0.6	~ 0.9 ~ 1.3	0.3 0.6	1982 1983	Yes No

N 26946.03

AROMATIC PRODUCTS

MAJOR COST CONTAINMENT PROGRAMS

1982 Manpower	Forecast Pretax Savings Incentive				Investment	
	Cumulative 1982-1986 (\$MM) *	First	% Factory Cost	\$MM/Year	\$MM	Year
		Year				
<u>Phthaloyl Chlorides</u>						
● Improve Yields- ICl/TCI	0.5	2.4	1982	0.5	1.2	None
● Use Du Pont "Crude" T-Acid for TCI Mfg.	0.5	7.0	1985	4.5	17.0	3.0 1983 Yes

* All dollars on a current year basis.

COLORED PIGMENT PRODUCTS
R&D ACTIVITIES AND OBJECTIVES

Major Technical accomplishments during 1981 include successful trial manufacture of a new automotive gold pigment, based on quinacridonequinone, which should generate \$470M in new pretax earnings by 1985. In addition, a new resinated copper phthalocyanine blue, with a 95M lb./yr. new business potential in 1982, was successfully developed and plant tested. Savings in yield and raw material usage during 1981 amounted to \$2MM (2% factory cost).

In 1982 we expect cost reduction programs to provide \$1.4MM in annualized savings. Major technical emphasis in 1982 will be placed on improving and documenting existing process technology to help improve long-term Colored Pigments productivity. We also expect to complete development and test manufacture of several low rheology quinacridone reds for use in High Solids Automotive Enamels. Laboratory development of a potentially proprietary class of azo pigment based on anthranilamide derivatives is expected to be sufficiently complete to allow us to decide on their commercial viability as lead chromate replacements.

N 26946.04

P. A. Wriede
September 21, 1981

COLORED PIGMENT PRODUCTS

<u>Benefit Group</u>	<u>Principal Program</u>
Cost Reduction	Described in Cost Containment exhibit.
Product Improvement	Develop low rheology quin-acridones for high solids automotive enamels.
Capacity Increase	None.
Regulatory Work	Develop low investment route for removal of heavy metals from Newark waste stream.

P. A. Wriede/gmd
September 21, 1981

COST CONTAINMENT

Colored Pigment Products

Cost reduction programs in 1982 include a commitment of \$0.8MM with a goal of \$1.4MM (1.2% factory cost) in labor, yield, raw material, and energy savings. 1981 Savings were \$2.0MM on an annualized basis, with major savings in raw materials and reduced substandard inventories.

Longer range program involves replacement of acetic acid with sulfuric acid in the hydrolysis of disodium succinyl succinate ester, a critical quinacridone intermediate. Raw material cost savings of \$600M in 1984 are expected on new investment of \$500M.

P. A. Wriede
September 21, 1981

COLORED PIGMENT PRODUCTS

MAJOR COST CONTAINMENT PROGRAMS

Program	1982 Manpower	Forecast Pretax Savings Incentive			Investment			
		Cumulative 1982-1986 (\$MM)*	First Year	Continuing \$MM/Year	% Factory Cost	\$MM	Year	On Construction Forecast?
<u>Quinacridone</u>								
● Reduce ingredients, energy consumption and substandard inventory.	1.2	1.0	1982	0.5	2	-	-	-
● Convert from acetic to sulfuric acid.	0.3	2.0	1984	0.6	2	0.5	1983	No
<u>CPC</u>								
● Reduce ingredients, energy consumption and substandard inventory.	1.5	0.7	1982	0.4	1.5	-	-	-
<u>Inorganics</u>								
● Convert YE-698-D from batch to continuous process.	0.2	1.5	1982	0.3	9	0.2	1982	Yes

* All dollars on a current year basis.

P. A. Wriede/gmd
September 21, 1981

COLORED PIGMENTS PRODUCTS

COST REDUCTION SUMMARY

1980 Actual	\$1509	(1.9% factory costs)
1980 Forecast	\$1060	
1981 Forecast	\$1002M	(1.2% factory costs)
Future	\$9128	(7.5% factory costs)

PAWriede/kww
10/15/80