

MONSANTO CHEMICAL COMPANY

Texas City, Texas

June 12, 1962

cc: J. M. Chamberlin
W. R. Nisbet
G. T. Ryan
C. P. Fullerton
L. B. Bullock
T. E. Shirley
~~J. L. Price~~

To: W. F. Zimmermann

Subject: Cost of Out-of-balance VCM

The VCM plant is presently running out-of-balance due to the lack of acetylene to meet requirements of both AN and VCM. This type of operation increases the cost of VCM in several ways: (1) chlorine must be purchased at a premium (out-of-balance with company-wise NaOH usage), (2) an extra chlorine barge must be rented, (3) excess acid must be dumped with loss of raw materials in addition to dumping expenses, and (4) acid absorber maintenance cost is excessive. An analysis of the incremental cost of producing out-of-balance VCM has been made to show the relative effect of the various cost factors.

JW Kongable
J. W. Kongable

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Att.

CBY 1019447

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SUMMARY

Cost to deliver 8.0¢/lb. VCM made out-of-balance from premium price chlorine while dumping acid. (If acid could be sold at \$6.00/ton, the costs would be reduced by 1.12¢/lb. VCM).

Total pounds made	1MM	Profit 4/16	2MM	3MM	
Customer: Shell	7.37¢/lb.	0.63	7.02¢/lb.	0.98	6.90¢/lb. 1.10
Great American	7.49	0.51	7.14	0.86	7.02 0.98
Velsicol	7.52	0.48	7.17	0.83	7.05 0.95
Cary	7.57	0.43	7.22	0.78	7.10 0.90
Escambia	7.61	0.39	7.26	0.74	7.14 0.86
Firestone	7.69	0.31	7.34	0.66	7.22 0.78

Cost basis:

Chlorine at \$59.30/ton delivered

C₂H₄ at 4.734¢/lb.

Acid dumping cost \$6.00/ton acid

Excess maintenance \$7,000/month (fixed)

Freight - our share of equalized freight

Chlorine Cost

	\$/Ton
Out-of-balance Cl ₂ (85% of market price)	55.50
Trip-lease of vendor's barge	3.00
Towing charges	.80
	\$ 59.30

Cost/lb. VCM:

$$\frac{126 \text{ lb. Cl}_2}{100 \text{ lb. VCM}} \times \frac{\$59.30}{2000 \text{ lb. Cl}_2} = 3.74¢/\text{lb. VCM}$$

(assuming the acid made is dumped, none of the Cl₂ value is recovered)

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Ethylene Cost

Cost/lb. VCM:

$$\frac{50 \text{ lb. C}_2\text{H}_4}{100 \text{ lb. VCM}} \times \frac{4.734¢}{1 \text{ lb. C}_2\text{H}_4} = 2.37¢/\text{lb. VCM}$$

Acid Dumping Cost

Dumping cost is \$6.00/ton of acid based on average cost in 1957.

$$\frac{\$6.00}{2000 \text{ lb. Acid}} \times \frac{187 \text{ lb. Acid}}{100 \text{ lb. VCM}} = 0.56¢/\text{lb. VCM}$$

Excess Maintenance Cost

Acid absorber maintenance averages \$7,000/month. This figure varies only slightly with rate.

$$\frac{\$7,000}{1 \text{ MM lb. VCM}} = 0.7¢/\text{lb. VCM}$$

$$\frac{\$7,000}{2 \text{ MM lb. VCM}} = 0.35¢/\text{lb. VCM}$$

$$\frac{\$7,000}{3 \text{ MM lb. VCM}} = 0.23¢/\text{lb. VCM}$$

Freight Costs

Our cost of freight for each customer is as follows:

	<u>¢/lb. VCM</u>
Shell	0.0
Great American	0.12
Velsicol	0.15
Cary	0.195
Escambia	0.235
Firestone	0.315

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