2,4-D

Major emphasis during the month was directed toward finding a means of spray drying Na-2,4-D. Initial consideration was given to the possibility of drying the material at Kenny. However, a visit to Kenny indicated that use of either of their dryers was impractical, since the units are committed to chrome production, and clean-out problems would be severe.

Following elimination of Kenny from consideration, efforts were directed toward finding a custom dryer who could dry the Na-2,4-D. Of several companies contacted, the only one still under active consideration is Custom Processing at Trenton.

At the suggestion of Purchasing, Dopco was contacted. Though they can't dry the material in equipment now operating, they said that they still have most of the components of a dryer dismantled last year. Use of this equipment as the nucleus of a spray drying facility at Newark might enable us to enter the Na-2,4-D market on favorable terms, with a minimum capital investment. This possibility will be explored further as soon as we are informed of the procedure to be followed in making additional contact with Dopco.

We have again examined the problem of poor ventilation in the flaker room. Changes will be made shortly to slope and flush the rust dust from the flaker in the hope that this will eliminate the plugging of this dust. Current performance of the bag packer is also being studied. It is felt that the main cause of our problem is the formation of lumps in the bin, which restrict flow to the packer. Efforts will be continued in this area.

MCA/DSP/mm

The quality of Muriatic Acid continued generally unsatisfactory during May, with both phenols and sulfates running higher than desired. The mist eliminator was found to be plugging rapidly with chlorophenols, and it was cleaned twice during the month. Sulfate level, however, still continued high.

Continued examination of the performance of the cyclone separator indicated that the pressure drop across this unit was not as great as first was thought. Tests of the performance of this unit showed that the quantity of chlorophenols removed were not great enough to bring the Muriatic Acid into spec. This cyclone can remove the equivalent of about 15 to 25 ppm of phenols in our acid, so at best, it can only be effective as the final clean-up of a generally clean stream.

Because of the failure of our efforts to date to consistently produce specification acid, efforts will be directed toward:

1. Modification of operating procedures to minimize carry-over of chlorophenols from the DCP chlorinators.
2. Evaluation of chemically assisted methods of stripping the phenol contaminants from the gas stream such as solvent extraction or freezing them out in a refrigerated condenser or crystallizer.

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The work-up of samples remaining from filtration tests run in April indicated that in no case was removal of the 2,3,7,8 isomer complete. An additional test using a precoat on the filter element was made in May, but results have not yet been analyzed. However, in this last run, as with in all earlier runs, rapid plugging of the filter element was observed. Thus, use of relatively small disposable filters as the primary means of TCP purification does not appear feasible, and work directed in this area has been [illegible].

Work directed toward the development of a procedure for the removal of [illegible] by absorption on activated [illegible] [illegible] with a small diameter [illegible] of activated [illegible] can successfully remove all of the 2,3,7,8 [illegible] from our TCP. In our lab tests, 130 [illegible] of TCP have been passed through a bed of [illegible] of activated [illegible]. [illegible] 500 [illegible] [illegible] which would be practical in the plant. [illegible] of the 2,3,7,8 isomer has been observed. The only operating problem is that the column gradually plugs with solids largely thought to be ferric hydroxide. Muriatic acid has been used to remove these solids and "regenerate" the bed. This test is now continuing after the second regeneration.

Efforts taken to provide additional heat in the vicinity of the NaCl collector did not eliminate the rapid plugging of this unit. Analysis of some of the caked NaCl removed from the collector showed 2.0% H_2O. Since the presence of water is known to cause plugging in the collector, a check is now underway to see whether there is a leak in some of the jacketed pipe or the steam coil in the tank.

DICAMINES

Test work on the Dicamines was at a low ebb pending the arrival of additional diamine and emulsifier samples from Humko. A meeting was held with representatives of Humko concerning our requirements as to iodine value of the diamine and what they can reasonably expect to make. Following this meeting, they proposed that the minimum IV spec on their Kemamine D-999 be lowered from 95 to 94. It is our feeling that D-999 at a minimum IV of 94 should be acceptable, but that we should hold strictly to this value, since further lowering of the IV might be detrimental to the Dicamine properties.

EXPANSION (APPROPRIATION NO. 6739)

Construction work on the warehouse and tank farm were finally completed during May. Main emphasis on the process changes was directed toward installation of the new vacuum pump and hot water system to enable early removal of existing units that must be relocated. Installation of power wiring within the building is now well underway as is piping work near the new caustic tank. Tankage for the TCP purification unit has also been installed.

Engineering work is essentially complete. Some further checking of the construction schedule with regard to alternate manning levels was finished during the month.

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[redacted]

Chlorination of a larger couple of mixed chloroacetic acids was completed and this material has been given to the Sales Department for delivery to the Toms River Chemical Company. Work directed toward the modification of the proposed formulation of a 2# emulsifiable concentrate of 2,4-D is underway, and a revised formulation should be available shortly.

Two complaints were evaluated during the month. One, a problem with Dacamine-4D plugging spray equipment which was correlated to residual Flobe acid which has not been fully dissolved at the time of manufacture. The second was a request by Dantoh to examine a formulated 2-[redacted]-T sample for possible Tordon contamination. No Tordon was found, but the 2-[redacted]-D level was significantly higher than in our retained sample.

Increased use of the new chromatograph which was installed in April widened our chromatographic capabilities considerably. New power wiring was installed to the Instrument Room in May to minimize the possibility of overloading any one circuit.

An Engineer attended a Chemical Industry Council pollution workshop to keep abreast of developments in this area. New legislation presently awaiting the Governor's signature is being reviewed to assess its possible impact on the Plant.

No appropriations were closed in May.

F. Gordon Sherard

FGS/rc

6/7/67

DS 00001075

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2,4-D

Average DCP Conversion, %	93.9
Average Cycle Time, Hours	7.3
Average Cooking Time, Hours	1.8
Average Cooking Temperature, °C	102.5
Usage #/# Product, DCP/MCA	.852/.586
Average Product Assay, %	99.3

MCA/DCP

	MCA	DCP
Number of Batches	66	65
Average Batch Size, Lbs.	8,383	10,862
Average Reaction Time, Hours	6.7	14.6**
Average/Maximum Reaction Temp. °C	110/116	80/89
Average Exit Gas Temperature, °C	-17	19
Usage #/# Product, Chlorine	.457	.496
Usage #/# Product, Acetic or Phenol	.595	.520
MCA-	99.5	2,4-DCP - 92.6
DCA-	Trace*	2,6-DCP - 6.5
Acetic-	1.5	o-Cl p - 0.5
Anhydride-	-0-	2,4,6-TCP - 0.4

* DCA assay believed to be low.
** Time somewhat long due to running only on recovered Cl_2 for 28% of the time.

ECL

Average Phenol Content, ppm	149
Average Sulfate Content, ppm	102

2,4,5-T

Average TCP Conversion, %	79.3
Average Cycle Time, Hours	6.5
Average Cooking Time, Hours	4.0
Average Cooking Temperature, °C	104
Usage #/# TCP/MCA	.832/.549
Average Product Assay, %	None Assayed.

TCP

		TCP Assay	
Number of batches	74	2,4,5-TCP	- 87.0
Average Batch Size, Lbs.	2,351	DCP	- 1.4
Average Reaction/Digestion Time, Hrs.	1.9/5.1	Anisole*	- 0.5
Average/Maximum Autoclave Temp. °C	169/174	p-dioxin*	- 71 ppm
Maximum Temp. in Anisole Still, °C	105		
Usage #/# Product, T_4CB	1.093	* and related compounds.	
Methanol	.557		
Caustic (liq./Solid)	.434/.316		

ESTERS

	BUTYL-D	BUTYL-T	2-EH-D	2-EH-T
Number Batches	55	41	22	No Production
Average Batch Size, Lbs.	7,574	5,568	7,593	
Average Cycle Time, Hours	19.7	21.7	19.2	
Average Reaction Temperature, °C	142	146	157	
Average Free Acid, %	0.8	0.0(ASTM)	1.8	
Average Color	-	-	-	

DS
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FGS/ns
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