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MONSANTO CHEMICAL COMPANY

Texas City, Texas

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To: H. M. Keating

Subject: VCM for Escambia - February

Ref.: Kilfoy to Lunsford, 2/23/61 - "Polymer Formation in Analysis of VCM"

During January, two of the cars received by Escambia were reported to have high iron content. This complaint made it imperative that their next shipment be good material. Our analyses of the material had shown no iron after filtering polymer out of the reagents used in the analysis. The slightly different reagents in the test used by Escambia apparently give a finer polymer which does not filter as readily. There is good reason to suspect that the filtering of polymer (in our test) removes iron from the sample and causes low answers.

A total of ten cars were loaded during early February for this customer. The composites on the two groups of cars both passed at the 0.2 and 0.1 ppm iron level. Individual car resamples were run with considerable polymer formation noted in all but one car. These results before filtering ranged from 0.2 to 1.0 ppm iron and after filtering ranged from 0.1 to 0.4 ppm iron. The Control Laboratory obtained reagents used in Escambia's test, developed calibration curves, and trained analysts to run their analytical method for iron. Several sets of resamples were taken and run for iron by our method and by Escambia's procedure, using various techniques for minimizing the polymer formation during the evaporation step. The best four cars were chosen and shipped, primarily on the basis of passing by Escambia's method and our method without the filtering step.

CBY 1108832

Iron in Cars Shipped to Escambia

Date	Car No.	Iron Analysis, ppm	
		Escambia Method	Monsanto Method
2/16	GATX 78252	0.1	0.1
2/17	SHPX 5114	-	0.1
2/20	GATX 78251	0.2	0.1
2/21	SHPX 5106	0.15	0.1

The attached tables show the analytical results on the ten cars evaluated. Although all ten cars passed as being low iron by our standard test method at some time during the resampling program, two of the cars were finally proven to be above 0.5 ppm iron. Considerable work was done by the Control Lab to evaluate variables affecting polymer formation during the evaporation step. The most effective procedure was to exclude ultraviolet light by using tinted, taped, or painted flasks. A survey of tank car cleaning showed that the tendency to form polymer depended on how recently the cars had been sandblasted. Further study showed this effect to be real but so slight that even a cleaning at 6-month intervals would not eliminate the problem. Samples taken in steel bombs also showed a much reduced tendency to form polymer during the test.

Currently, all iron tests are being run in amber glass containers, and a Research study of means to eliminate the polymer formation is in progress.

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Attachments

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