PLAINTIFF'S EXHIBIT
CEL-247

CELANESE CHEMICAL COMPANY
Chemcel Plant
Bishop, Texas

To: C. W. Harrison

From: W. H. Meyer WHM-127-78 February 2, 1978

Laboratory Department Summary
January, 1978

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January, 1978

The Bishop Plant Laboratory activities during January are attached. Section I contains a summary of the Analytical Group activities with a table of analytical statistics. Section II contains a Quality Assurance Summary and a table listing shipments, quality waivers, quality complaints and sample shipping statistics. Section III describes the status of Special Problems Group projects by Unit Chemist assignment. A table listing the priorities, justifications and estimated completion dates of current Special Problems projects is also included in Section III.

W. H. Meyer

WHM/jm
Attached Report

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I. ANALYTICAL GROUP

Competitive Evaluation

None this month.

Methanol Oxidation (MO), Formaldehyde (HCHO)

MO-II - Analytical assistance was provided for continuing studies on the effect of feeding T-240 overhead to the MO units.

Analyses were provided for the rate of methyl formate hydrolysis at varying temperatures and formic acid levels. This is a step in determining specification limits for T-240 overhead feed to MO.

MO Pilot Plant Product - CCCTC - Two samples of formaldehyde from the pilot plant at CCCTC were submitted for analytical cross-check of methanol. Both analyses confirmed data at the 0.5% level obtained by the CCCTC Analytical Group.

Oxo, Butyraldehyde (BuH), Butanol (BuOH), Propanol (PrOH)

n-PrOH - At the request of the Bay City Lab and for the Bay City Plant barge loading line dual use (n-BuOH and n-PrOH) project, four PrOH samples were sparged with varying amounts of methane gas to determine the effect of methane pigging on PrOH concentrated residual odor characteristics. All samples passed the odor test.

n-BuOH - Lab blends of T-67 residue (25%) and T-67 sidestream (75%) were monitored for ten days to determine the residue's effect on selected points of specification. A slight color throw was noted at 6-7 PtCo level, versus our specification of 10 max. The unit is currently blending 10% residue stream into the sales grade product.

Paraform

Methyl Formcel® - On January 5, 1978, a Methyl Formcel car shipment was discovered to be contaminated with approximately 1.0% n-BuOH. Consultation with New York Quality Assurance and Marketing resulted in the institution of a guideline maximum of 0.1% n-BuOH for Methyl Formcel product shipment. Quantification of this level impurity required modification of the existing method of analysis (G.C.). Method modification has been accomplished and examination of 1977 shipments reveals previous levels of 0.00-0.13% n-BuOH. Routine monitoring of the percent of n-BuOH in Methyl Formcel production will commence.

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II. QUALITY ASSURANCE

Formcel Products - Contamination of Methyl Formcel with 0.9% n-butanol (BuOH) in tank car CELX 132555 pointed out a serious quality control problem. Before shipment to American Cyanamid, the contaminated Methyl Formcel will be gradually blended off to reduce the butanol content to less than 0.1%.

Starting January 1, 1978, we are reporting the methylal and calculated sodium formate content in Methyl Formcel shipments to Newark, New Jersey.

Celanese has agreed to a 50 ppm maximum sodium formate content in Methyl Formcel shipments to Rohm and Haas. Shipments are supplied out of Newark. Plans are underway to convert all other Formcel production February 1, 1978, to the caustic treated process.

One tank truck (two compartments) shipment of n-Butyl Formcel® was delayed one day to Reichhold Chemical Company (Greens Bayou, Texas), and to Napko Corporation (Houston, Texas). The delay was caused by cloudy, brownish colored product. The off-spec material was off-loaded and replaced with spec product.

Formaldehyde - Two complaints have been received from Acme Resins this month due to cloudy 50% HCHO. In both cases the tank cars are being returned. In December, we reported that Amoco was receiving 44% HCHO which had a cloudy layer in the bottom of four tank cars. Amoco used most of the product, but returned large heels. The retains on all these cars were checked and, as of this time, no assignable cause can be identified except for extreme cold temperatures in the Northeast and Midwest. We are increasing loading temperatures to the maximum on the ranges for winter loading. When the two tank cars return from Acme, the condition of the cars and insulation will be thoroughly checked.

Tank car CELX 4228 returned to Bishop January 13, 1978, from Amoco contained a 16-inch heel and assayed 33.27% HCHO. This would indicate that Amoco is adding some water.

Blending unit mechanical problems caused six missed shipment blends during the month. We had to adjust in the cars and trucks. We need priority on resolving the in-line blender problems.

Trioxane (TO) - A complaint was received from the GTE Sylvania Canada Corporation in Quebec on Lots 76-12-22-XT, 77-2-3-IT, and 77-8-17-AT. Two of these lots are one year old or more. The customer reported trouble liquifying the TO in Delkit containers. A sample has been requested by Mr. I.N. Smith of Pan Amcel Company. As of this date the problem remains unresolved.

Sample Shipping and Quality Assurance Statistics

Statistics For January 1978

Sample Shipping	Month	YTD	Previous YTD
Domestic	37	37	113
Export	4	4	15
Plastics	2	2	10
Other	8	8	161
Total	51	51	299

Quality Assurance Statistics

	Month	Y-T-D	Previous YTD
Shipments (NO.of Orders)	645	645	843
Delayed	5	5	4
Wavlers Internal	1	1	2 (T)
Wavlers External	2	2	-
Complaints (Total)	4	4	4
Complaints (Legitimate)	-	-	1
Complaints (Non-Legitimate)	1	1	3
Complaints - Outstanding (Unresolved)	3	3	-

BOD Unit Analytical Methods Manual - No progress due to priorities.

Anaerobic Testing of Chemical Wastes - Construction of the Bishop anaerobic-aerobic laboratory pilot unit will be completed early in February. A G.C. method for the analysis of the anaerobic offgas has been set up and is being tested. Sample collection and analytical schedules as well as startup and operating procedures for the unit are being worked out at present.

800 GPM Demineralizer Unit Support - Data on the blocking flow study of the strong acid cation bed (SAC) has been summarized. A letter to be co-authored with Process Engineering is in progress.

Demineralizer Expansion Support - Present studies to determine the effect of increased demineralizer capacity on the lime pits outfall have been completed. A report is being written.

Compatibility of T-240 Overhead With the Gasoline Tank - A short study was conducted to determine the compatibility of T-240 OH with the contents of the "Gasoline Tank". From the samples taken at the time of the study (compositions of T-240 and tank contents vary), it was found that T-240 OH is miscible with both the organic and aqueous phases of the gasoline tank. A report will be issued to Process Engineering.

OSHA Monitoring
J. M. Jackson, L. M. Pena

Area and personnel 8-hour TWA samples for HCHO are being taken in the Paraform Warehouse and the Paraform Unit. A report will be issued on the results.

Samples of airborne HCHO were taken by Mr. L. Birkner, Celanese Corporate Industrial Hygienist. These samples are to compare the SCM Dimedone method and the Celanese Chromatropic Acid method for HCHO determination.

Data on chemical exposure for all job descriptions in the Chemical and Plastics Company production areas at Bishop have been secured with the help of both Operations Departments. This data has been submitted to Dr. H. Michael Utidjian and will be used in establishing a medical surveillance program for the Bishop location.

Analytical results have been received on benzene monitoring of TO-II and SH-II Operators, Operator Helpers and Supervisors. A report is in progress.

Esters, Methylal, Paraform, Formcel Products
R. G. Briell, R. G. Hilbrich

Paraform, Formcel Products and
Ester Unit Analytical Manual - No progress due to priorities.

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During the latter part of the week ending January 15, 1978, colors of <5 PtCo units were being seen in the daily lot sample (5% solution). "B" filtrate readings during this time were about 30 PtCo units. By the latter part of the week ending January 22, colors of 6 PtCo units were seen in the lot samples. This confirms the observation reported earlier (HHT-25-77) that when color readings of about 5 PtCo units are seen in the PE product, there is about one week of carbon bed life left.

Reducing Sulfates in PE AML - No further work has been done in January concerning this problem, with the exception of occasional monitoring. Since the Unit came up January 5, Pure PE has been made and the level in the AML has been averaging about 1 wt.% sodium sulfate on a contained salt basis. A letter will be issued soon by H. H. Thigpen explaining the various factors to be controlled to minimize the sulfate level. As it now stands, we have little problem meeting the 0.5% sulfate (contained salt basis) requested by Virginia Chemical during Tech runs, but can expect 0.5 to 1% during Pure runs, with occasional excursions to 1.5% or higher.

1,3-Butylene Glycol, Diacetone Alcohol
A. R. Hancock

T-227 Modifications - A joint letter with Process Engineering was published in January recommending that the vapor sidestream in the Butylene Glycol (BG) finishing column (T-227) be replaced by a residue stream. As soon as a few minor changes are made to the Unit, a Plant trial will be conducted. This project will be dropped from the monthly summary until the Plant trial is scheduled. Lab work will then be required to support the Plant trial.

DAA Unit Support - A study is currently underway in the DAA Unit to determine if the Goodyear acetone is the cause for the rapid deactiviation of the catalyst beds that has been seen in the past months. The current run is using only W-10 acetone (no Goodyear acetone). Reactor product samples are being taken three times daily and are being analyzed by the Laboratory. T-295 residue composite samples are being collected, but will not be analyzed unless data are needed to explain some unusual results. Production plans to use a mixture of acetone containing more than the normal amount of Goodyear acetone for the next DAA run as a comparison to the W-10 acetone. The Laboratory will continue to follow these studies.

Monitoring T-295 Residue for Acetone - Samples of T-295 residue continue to be analyzed for acetone losses Using Engler distillations, the initial boiling point of T-295 residue can be directly correlated to the amount of acetone in the residue. The current Unit total carbon analysis does not indicate the amount of acetone lost because many other compounds are present. A report will be issued.

rates were determined for the individual temperatures. A report will be issued detailing the results.

Oxo, PrOH, BuOH Unit Support
A. J. Bacon

Assay work on the ash of Run #2 solids was completed. Engelhard proposed giving us credit for 85% of the rhodium in Run #3 second ash rather than trying to concentrate it further. Work has begun on those assays.

Analysis of blends of 25% T-67 residue in T-67 sidestream product showed the mixtures to meet specs. This clears the way for blending off the T-67 residue as spec material. A report will be issued.

Light ends in isobutyraldehyde were confirmed as being propylene and propane (∿ 2:1) at the 2-5% level.

Rhodium Accountability - Accountability continues to be good. However, as the concentration of rhodium increases in the reactor, carry-over into T-210 residue is also increasing (∿ 5-6 ppm).

Reactor Stability/Accountability - Due to a decline in the G.C. analytical method, the Triphenylphosphine (TPP) concentration in the reactor fell to ∿ 26%. Operations has been trying to build this up. The Lab set up the TPP titration method to back up the G.C. We are now showing 31-32% TPP (January 30, 1978).

Part of the problem in the TPP level falling is the high propy-diphenylphosphine (PDP) make rate. The amount of PDP in reactor samples has increased steadily through the run from ∿1% shortly after startup, to the present 5.5%. This is approximately four times higher than we've seen for any run, and is well above the 2% predicted by the Tech Center. Analysis of T-210 residue shows that at least 40% of the TPP being lost is going to PDP. The cause is unknown. Speculation is that the high rhodium concentration (inactive?) or the high solids content may be catalyzing PDP formation.

As time permits, we have been checking for known catalyst poisons to try to aleviate the high rhodium usage rate. The catalyst was analyzed for chloride and sulfur. Both were very low at 20 and 50 ppm, respectively. The rhodium usage rate has been lower over the past two weeks. This also coincides with the switch to Matthey-Bishop rhodium. We will be watching this.

Studies to Eliminate Oxo T-210 - M. E. Harris

Work continues to determine the extent and type of heavy ends build in T-210 due to inorganic salts in the feed. Initial indication is that the salts increase non aldol-type heavy ends. Work continues.

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Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
MO Efficiency Improvements With Trace Amounts of Halogenated Hydrocarbons	Presley	2	Raw Material Savings	August, 1978
MO Catalyst Screening	↓	2	To Establish Alternate Suppliers And Improve Catalyst Quality	Continuing
MO Catalyst Reuse	↓	2	Reduce Silver Inventory	March 1, 1978
MS-II Crude to MO	↓	1	Steam Savings	Plant Testing Complete by March 31, 1978
Reduce Methylal Formation In MO Distillation Columns	↓	1	Raw Material Savings	Plant Testing By April 31, 1978
T-240 Overhead Effects on MO-II	↓	1	Raw Material Savings	Undetermined
Stability of 50 and 52% Formaldehyde	Harris	1	Improve Quality Control	March, 1978
Improved Metolose Analysis	↓	1	Improve Quality Control	March, 1978
Purchase Specification Update	Smith	2	Maintenance of Business	May 1, 1978
BOD Analytical Methods Manual	↓	2	Maintenance of Business	March 1, 1978
Anaerobic Pilot Testing of Chemical Waste Streams	↓	1	To Test Anaerobic Process As Alternate BOD Expansion	January 1, 1979

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Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
Demineralizer Expansion Support	Smith	2	Support Unit Expansion	March 1, 1978
OSHA Monitoring	Jackson Pena	1	Ensure Employee Health and Safety OSHA Compliance	Continuing
1,3-BG Unit Emissions Survey	Hancock	1	Ensure Compliance With Standards	March 1, 1978
1,3-BG Unit Support	↓	1	Maintenance of Business	Continuing
DAA Unit Support	↓	1	Maintenance of Business	Continuing
DAA Unit Emissions Survey	↓	1	Ensure Complaince With Standards	March 1, 1978
DAA Laboratory Reactor Study	↓	2	Increase Unit Capacity and Steam Savings	February 1, 1978
Monitor T-295 Residue Acetone Loss	↓	2	Minimize Efficiency Loss	February 1, 1978
PE Unit Emissions Survey	Briell	1	Ensure Compliance With Standards	March 1, 1978
Reduce Sulfate in PE AML	↓	2	Comply With VCI Request	March 1, 1978
Update PE Unit Lab Methods	↓	1	Maintenance of Business	March 1, 1978

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Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
Acetate Unit Emissions Survey	Briell	1	Ensure Compliance With Standards	March 1, 1978
PE Unit Support	Briell, Mayerle	1	Maintenance of Business	Continuing
Paraform-Formcel Unit Support	Hilbrich, Briell	1	Maintenance of Business	Continuing
Acetate Unit Support	↓	1	Maintenance of Business	Continuing
Alternate n-BuAc Process	Hilbrich	1	Steam Savings	May 1, 1978
Paraform, Formcel Products, Esters Unit Analytical Methods	↓	2	Maintenance of Business	April, 1978
TMP Unit Support	Mayerle	1	Maintenance of Business	Continuing
TMP Unit Emissions Survey	↓	1	Ensure Compliance With Standards	March 1, 1978
Alternate TMP Purification Scheme	↓	1	Energy and Raw Material Savings	March, 1978
TMP Unit Analytical Methods Manual	↓	2	Maintenance of Business	March 1, 1978
Fuel Gas Quality	Dow	3	Improve Fuel Gas Accountability	Continuing

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Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
MS-II Analytical Support	Dow	2	Maintenance of Business	Continuing
T-240 Overhead to MO-II		1	Cost Savings	February 15, 1978
Crude Methanol to MO		2	Cost Savings	March, 1978
DME in Crude Methanol		2	Lurgi Catalyst Conversion	Continuing
Oxo, Butanol, Propanol Support	Bacon	1	Maintenance of Business	Continuing
Reactor Stability/Accountability		1	Improve Reactor Control	Continuing
Rhodium Accounting		1	Maintenance of Business And Cost Savings	Continuing
Studies to Eliminate Oxo T-210	Harris	1	Steam Savings	March, 1978

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