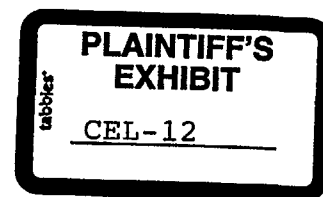


CELANESE CHEMICAL COMPANY
Chemcel Plant
Bishop, Texas



To: Dr. R. R. Graham

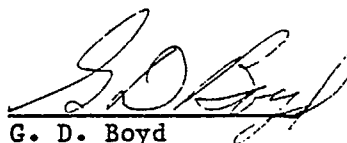
From: G. D. Boyd

GDB-164-82

March 4, 1982

LABORATORY DEPARTMENT SUMMARY - FEBRUARY 1982

Attached is the Laboratory's monthly summary for February. The summaries are by groups. A table listing priorities, justifications, and estimated completion dates of Special Problems projects is also included.


G. D. Boyd

GDB:jr

Distribution:

Chemical

J. J. Fritsch
D. G. Pausky
W. H. Meyer
A. A. Miller
G. R. Scholz
M. D. Harvey
G. L. Cade
C. W. Lee
D. D. Siemonsma
W. L. Sharp
D. E. Lockwood
M. W. Clifton
L. M. Harvey
H. H. Thigpen
A. G. McGehee
B. C. Kerr
F. R. Dow
W. P. Hightower
R. R. Carpenter
R. S. Hahn
J. C. Rubiano
K. R. Stelts
W. H. Brough

Plastics

A. C. Abshier
R. L. Bunkley
D. A. Reck
D. W. Steele
E. J. Heinz

CCCTC

G. J. Fisher
W. E. Heinz
W. T. McNair
Central Files (2)

J. N. Gann, Bay City
J. E. Sanborn, Bayport
J. L. Paul, Clear Lake
D. W. Harris, Pampa
T. H. Golson, Dallas

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HIGHLIGHTS

● A pilot phosphoric acid washing of amine contaminated oxo catalyst (Run VI) appears to be successful based on tests for activity, rousing and aldol formation. A Plant test of this 275 gallons of treated catalyst solution is recommended. Another pilot size batch will be treated with the objective of reducing the long phasing time required following the water wash.

● A technique for producing paraform prills in the Laboratory was developed. This will allow studies of the effect of additives on ageing and drying characteristics of paraform prills.

● A compound which appears to correlate with uv absorbance in Pure-grade pentaerythritol has been trapped using liquid chromatography techniques. The sample has been sent to CCCTC for identification.

● Acclimation of BOD II to polyol effluents is proceeding. Daily feed is being determined on a constant pounds-of-TOD basis (rather than the previous volumetric basis) due to the variability of the polyol effluent. Current polyol feed is at 2625 lbs. TOD per day (maximum loading is estimated to be ~1500 lbs TOD per day.).

● A letter has been issued in which a process for the production and separation of di-PE from mono-PE has been presented.

I. ANALYTICAL GROUP

Customer Complaints

1-28-82 Merck, Inc., Albany, Ga. - Methylal -120 drums - Material contaminated with 0.8% propyl acetate from unflushed dead leg in transfer/loading line at Plant.

2-5-82 Plastics Engineering, Sheboygan, Wisc. - 52% HCHO - 20M gal car arrived at 120°F and paraformed out. Material shipped at 167°F in 6" insulated car and in route only 11 days. -

2-22-82 Du Pont, Louviers, Colo. - PE Pure - 450 bags - Customer complained of high UV absorbance. Material returned to Plant and replaced from inventory

Quality Waivers

2-3-82 - Methylal - Celanese Bayport Terminal - MeOH content at 1.4 vs. MCS of 1.0 max. - 33,000 lbs. QD

2-4-82- Methylal - Celanese Bayport Terminal - MeOH at 1.4 vs. MCS of 1.0 max 40,840 lbs. - QD.

2-4-82 - Methylal - Dow Chemical Co., Freeport, Tx. - MeOH at 1.4 vs. MCS of 1.0 max. - 73,930 lbs. - QD.

2-17-82 - PE Pure- Du Pont , Louviers, Colo. - 80,000 lbs. - Purity 98.95 vs. special customer spec. of 99.0 min.

2-9-82 Methylal - Celanese Newark Terminal - MeOH content at 1.3 vs. MCS of 1.0 max. - 148,900 lbs. - QD.

2-10-82 - Methylal- Celanese Bayport Terminal - MeOH at 1.4 vs. MCS of 1.0 max - 49. - QD.

2-18-82 - Methylal - Celanese Bayport Terminal - MeOH at 1.3 vs. MCS of 1.0 max. - 36,280 lbs. - QD.

<u>Product</u>	<u>% QD¹</u> <u>Month</u>	<u>% QD</u> <u>YTD</u>	<u>% SQD²</u> <u>Month</u>	<u>% SQD</u> <u>YTD</u>
Methylal	90.5	92.0	0	0
PE-PE	0	0	2.4	1.6

¹ Lbs. of product shipped out of Manufacturing Control Specification vs. total lbs. of that product shipped for month and ytd.

² Lbs. of product shipped out of Sales Specification vs. total lbs. of that product shipped for month and ytd.

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Analytical Statistics

	<u>Feb.</u>	<u>Feb.</u> <u>YTD</u>	<u>Previous</u> <u>YTD</u>
<u>Sample Count</u>			
Chemical Section	4015	8895	8782
Instrument Section	<u>2505</u>	<u>5346</u>	<u>4668</u>
	6520	14241	13450
<u>Technician Overtime</u>			
Chemical Section	71	149	183
Instrument Section	<u>35</u>	<u>95</u>	<u>63</u>
	106	244	246
<u>Sample Shipping</u>			
Domestic	60	120	106
Export	4	5	5
Plastics	0	2	4
Others	<u>14</u>	<u>14</u>	<u>15</u>
	78	141	130
<u>QA Statistics</u>			
Shipments	633	1198	1096
Waivers (QD)	6	7	0
Waivers (SQD)	1	1	2
Complaints	3	3	3

II. STAFF CHEMISTS

Process Technology
B. C. Kerr

Di-PE Recovery Project - A letter has been issued in which a process for the production and separation of di-PE from mono-PE has been presented

Preliminary laboratory work has shown that mono-PE may be catalytically converted to poly-pentaerythritols. The data which have been obtained, thus far, indicate that substantial purification problems would exist, since the catalytic dehydration of mono-PE does not stop at the di-PE but produces higher homologs as well. Some further work is planned for this evaluation.

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Laboratory Synthesis of Versene® (EDTA) - Laboratory investigation of the "scum" problems encountered at Dow with Celanese formaldehyde have been hampered by an inability to properly evaluate the empirical data being generated. Although we now have extensive analytical data for various sources of formaldehyde, there is no way to assign known impurities with the problem. Work is in progress to carry out Laboratory synthesis of the tetra-sodium salt of EDTA under controlled conditions such that the method may be used as a scanning performance test to evaluate the effects of various impurities in the formaldehyde. This work is based upon the discussion of chelating agents found in Walker's "Formaldehyde".

Recovery of Sodium Formate From Methyl Formate - A cursory evaluation of the MO IV vent stream indicates that Bishop may be able to produce between 6 MM and 12 MM pounds per year of sodium formate with a quality equal to, or superior to that of the TMP product. Currently, the MO IV unit is producing between 0.25 and 0.5 mole percent of methyl in a vent stream of 1.7 MM SCFH. In addition, there are substantial amounts of formaldehyde and methanol available in this stream.

Special Analytical
F. R. Dow, B. W. Wise

37% Uninhibited Formaldehyde Shipment To Dow Chemical Co. - The first formaldehyde shipment to Dow was made February 2, 1982. This shipment was from MO IV product that had been monitored and segregated from other Plant formaldehyde so that the best possible product was prepared for this shipment. The normal formaldehyde specs were met, however, the shipment sample did fail the Laboratory "scum" test. The validity of the Laboratory "scum" test for prediction of "scum" formation in Dow Versene is unknown.

Dow Versene "Scum" Problem - Identification of potential "scum" producing components continues. Methyl ester preparations of extracts from feed to the MO units and formaldehyde product have not shown evidence of high molecular weight acids.

Confirmation of hydrocarbons in MO formaldehyde has not been established, however, hydrocarbons are found on the MO IV product filters. This indicates that hydrocarbons are present but our current analytical procedures are inadequate. Analysis of hydrocarbons in MO product is a primary objective.

Rain Water Monitoring (B. W. Wise) - As of February 21, 1982, weekly composites of the Chemical and Plastics rain water runoff have been analyzed. The polyol unit appears to be the major contributor of contamination in the samples of the Chemical runoff. Celcon's runoff is generally much lower in contamination, with MeOH, HCHO and TO being the main contaminants detected. Changes in the Chemical runoff COD levels seem to be directly related to unit start-ups and shut-downs. 1.3-BG, TMP, PE, and NaFo are the major contaminants. DAA has yet to be

detected. The NaFO level has decreased drastically since the beginning of the monitoring program, from 60,000 ppm to <100 ppm at times. The total COD was reduced from approximately 40,000 to approximately 10,000 since the 1,3-BG unit went down in December. Accountability for COD averages 71% for the Chemical runoff and 77% for Plastics.

Individual polyol sumps have been analyzed as requested by G.P. Rodriguez, and the results are in the process of distribution. The 1,3-BG sump showed the highest levels of contamination, as the weekly composites indicated. DAA and TMP also had high levels of COD, although the DAA unit was down. Results are published in BW-25-82.

III. SPECIAL PROBLEMS

Group I - H. H. Thigpen

Methanol Oxidation, Formaldehyde Blending

J. F. Glenister, T. A. Jasek, J. E. Russell, R. L. Day

Analytical AMR's (Glenister) - February 11, 1982

MO II: Operations requested analytical AMRs to verify readings from unit instrumentation.

	<u>Indicated</u>	<u>Analytical</u>
"A" Train	1.15-1.16	1.12
	"	1.10
	"	1.12

Effect of Ageing of 50% Formaldehyde Formation of Scum in Dow Versene

(Glenister) - The effect of ageing of 50% formaldehyde on the amount of scum formed in Versene was examined using F. R. Dow's scum test. Samples of 50% HCHO and ~ 25% HCHO were stored at 60°C for two weeks. The level of "scum like" material was determined initially and at different ageing times. The storage of the formaldehyde has no apparent effect on the presence or amount of "scum" formed in Versene. No additional studies are planned.

Scum in Dow Versene (Jasek, Russell) - Several additives to EDTA were found to produce scum. These scum were analyzed by infrared spectroscopy (IR). The IR scans were then compared to a scan of material which is believed to be the scum. IR indicates the presence of EDTA in some form in the scum from Versene. Metalose when refluxed in Versene does form a scum with an IR scan virtually identical to that of the scum from Versene.

Additional numerous IR scans were run to support work of other people who are working on the scum problem.

Filtration was found to improve the performance of some samples at 37% HCHO in the Laboratory's "scum" test. It is unknown whether this would relate to the scum formation in Versene.

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Addition of flouride as an anion caused a precipitate to form in Versene. The precipitate was isolated and the infrared (IR) spectrum of the precipitate was compared to the IR spectrum of "scum" from "bad" Versene. The spectra did not match.

The IR spectrum of EDTA known to be chelated with iron (iron saturated) was compared with the IR spectrum of the "scum". The spectra compared favorably, but an analysis of a sample of "scum" showed levels of metals on the order of 5 ppm. This possibility was then ruled out.

HCHO Stability (Day) - Attempts were made to correlate the Dow "scum" problem with HCHO stability this month. Results are not available yet.

HCHO samples were spiked with 200 ppm of different organic impurities to determine their effect on stability. The organic impurities used were trioxane, tetroxane, and waxes. Results are not available yet.

Methanol Synthesis

J. C. Bustabad, T. A. Jasek

MS Purge Gas (Jasek) - The Laboratory was requested to verify the process analyzer on the purge gas at MS. The Laboratory analysis agreed with the process analyzer with $\pm 2\%$. The Laboratory analysis was based on the Big 3 standard which was also used to standardize the process analyzer. These results were reported to Operations.

Evaluation of MS Methane Feed (Bustabad, Jasek) - The Laboratory was requested to analyze the methane feed as part of the overall project to determine the cause of hot spots which had been experienced by MS. A composite sample of the methane after the coalescer, but before the guard beds showed 93.47 mol.% methane. The individual suppliers were sampled before the coalescer and the following methane concentrations were observed:

Supplier	Methane (mol %)
Channel	92.85
Houston Oil & Mineral	91.34
Houston Natural Gas	94.71

It should be noted that the composite was from a different day and after the coalescer. This may impact the concentration of the methane if any liquids are removed by the coalescer.

Some liquid which came from the coalescer was also received from Operations. Also, the IR of the material did seem to indicate the presence of a hydroxyl group, the material was not triethylene glycol believed to be used to treat some of the methane received by Bishop. There did appear to be some alkenes present. Work continues to determine if alkenes are definitely present.

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An attempt was made to determine alkene and sulfur presence directly the methane by IR. This attempt failed because the gas sample cell path length was too short.

Samples of the steam feed were sent to CCCTC for chloride and sulfur analysis. Neither was detectable (detectable limit is 0.5 ppm for each element). Samples of the methane were analyzed for chlorides at Bishop. Again none were detected.

Summary of Product Color Trends In The MO Units (Glenister) - MO II was on spec with regards to color for most of the operating time in February. Intermittent color increases were experienced, but the highest color produced was 8 APHA. MO II shutdown February 16, 1982 for annual turnaround. MO III production was on spec from February 1 through February 19 when several days of higher color was experienced (6-8 APHA). MO III is receiving T-240 and T-185 during the MO II shutdown. MO IV production was on spec through February 10, when the unit shutdown for maintenance and catalyst change. MO IV experienced some color on startup, but production was on spec (<5) for the remainder of the month.

Isolation and Identification of Color Bodies (Jasek) - No further progress in isolation of components in the color concentrate extracted from the carbon on the MO unit product filters was made. Further work is awaiting the availability of the LC.

Sampling of T-33 Scrubber Vent Stream (Glenister) - The sampling procedure for the vent stream has been refined and analytical methods for analysis of the condensed samples are being developed. Plans include conducting sampling and analyzing for MeOH, MeAL and MeFo in addition to the wt.% HCHO. One objective is to accurately measure efficiency losses to individual by-products, including methyl formate.

Evaluation of Possible Alternative Cleaning Agents for Tank Car Cleaning (Glenister) - Laboratory evaluation completed. Shipping Services decided to try a different mixture of liquid soap similar to the original spillclean, but it contains less antifoaming agents. The liquid soap is being evaluated by Shipping Services in a series of tank car trials for buildup of film on subsequent usage and effects on quality of product shipments. No additional Laboratory tests are planned. Work to date will be documented.

Analysis of Samples From Flame Arrestor Knockout Pots At MO III and IV (Glenister) - D.S. Gunter requested analysis of solutions from the Flame arrestors at MO III and IV for HCHO, MeOH content and foaming characteristics. She is working on a solution to corrosion problems in the MO IV incinerator. Laboratory analyses are completed and a letter is written.

Silver Sampling (Jasek) - The Laboratory was requested to sample some "typical" used silver catalyst. This material was sent to three refiners for evaluation as possible silver suppliers. The samples were sent at the request of J. W. Corley in the Dallas office.

Oxo, Butanol
J. C. Bustabad

Pilot Study -H₃PO₄ Extraction Of Oxo Run VI Catalyst Solution -
275 gals. of Oxo Run VI catalyst solution were used in a pilot study to determine the feasibility of H₃PO₄ treating remaining Run VI catalyst solution. Problems were encountered with water washing. Phasing was extremely slow; 26 days were required to recover ~94% of Rh and ~90% of TPP. It is thought that the emulsion causing the phasing problem was a result of mixing too efficiently. Tests are in progress to determine if (a) the water washes can be omitted from the procedure without significantly affecting rousing or aldoling tests, or if (b) the water washes can be conducted using less efficient mixing, thus preventing the phasing problem.

The pilot treated Run VI material showed the same or slightly improved rousing and activity as Run VII catalyst solution (2/9/82). Pilot treated Run VI catalyst solution showed a significant reduction in aldol formation than untreated Run VI catalyst solution. 2-Ethyl-2-hexenal production in the aldol tests (Day 6) of pilot treated Run VI catalyst solution and Run VII catalyst solution was 4.5% and 3.5% respectively. This slight difference is considered insignificant. A Plant trial of the pilot treated Run VI catalyst solution is recommended.

C. Itoh TPP - Base case data of Run VII Oxo reactor solution is presently being established for upcoming C. Itoh TPP Plant trial.

Paraformaldehyde
J. E. Russell

Paraformaldehyde Prills - The Laboratory has defined an experimental approach to determine which additive should be used, if any, in the proposed pilot prill unit. The additives, or catalysts, will be tested for their effect on ageing, drying, cloud time modification, solubility, and hardness. Prills produced in the Bishop Laboratory will be aged and/or dried in a Laboratory fluidized bed and periodically tested for these characteristics.

The Laboratory produced a batch of paraformaldehyde prills by dropping 3rd stage paraliquid(~86% HCHO) through a small hole into a reservoir of cyclohexane. The prills that were made were dried after a pentane wash and screened for the proper particle size. The assay of the prills immediately after the pentane wash and dry was 88.62 % HCHO. The assay of the paraliquid was approximately 88.0%. Seven days later the assay of the same prills after ageing and limited drying was 92.46%.

The Laboratory is developing a fluidized bed dryer for use in the catalyst experiments. There has been only limited success in this area so far. Equipment is on order which should enable the Laboratory to construct a better air distribution system for the dryer.

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Group II - L. M. Harvey

OSHA

C. E. Gary, K. V. Parker

Noise Exposure Survey (Parker) - The monitoring of Maintenance personnel for noise exposure is ~80% complete. (Three Metrologgers were returned to the manufacturer for repairs and are now in transit back to the Plant.

Exposure Data Files (Parker) - Computer print-outs of exposure data are being checked and filed.

Formaldehyde Methods Validation (Gary, Parker) - The evaluation of variations of Celanese chromatropic acid-formaldehyde methods is complete. One data point is being checked to determine the better of two methods. (Report in progress.)

Trimethylolpropane

R. L. Day, B. K. Huelle

Methanolysis of V-747 Residue (Huelle) - Laboratory work to improve the economics of the methanolysis process continues. Several experiments are being carried out to determine the optimal residence time for two cases; methanolysis of V-747 Residue using a 5:1 molar ratio of MeOH:bis-TMP linear formal and a neat hydrolysis of V-747 Residue using T-205 OH as a diluent. Data indicates that the two hour residence time used in previous cursory economics was excessive. A one-hour residence time results in only a 3% drop in yield. It was observed that as a residence time decreased, TMP cyclic monoformal concentration dropped much faster than did TMP concentration in the 5:1 molar ratio experiments.

This data shows the reaction paths for TMP formation are different for the two cases. In the methanolysis experiments the TMP to cyclic formal yield ratio is 2:1. In the neat hydrolysis the ratio is 1:1.

Current experiments have shown a 3 to 5% drop in yield as compared to previous data. The resin bed has been regenerated with formic acid and experiments are underway to determine if the regeneration has restored the efficiency of the resin.

TMP Expansion (Day) - The cursory design for the future expansion of the TMP Unit calls for backwashing sodium formate (NaFo) from TMP external to the extractor (T-312). A two-stage continuous wash with cool-down will reduce the NaFo levels in the organic extract from 520 ppm to 0.6 ppm. This is a greater reduction in the NaFo level than obtained with other methods, but the TMP recycle is also significantly higher. Future work will involve optimizing the wash-water rate, temperature, and number of backwash stages. A status report coauthored with Process Engineering was written.

Condensing Polyol Vents to Send to BOD (Day) - The TMP concentrator overhead (V-759, 760 OH) and PE "A" Evaporator overhead are currently vented to the atmosphere. Process Engineering has requested that the Laboratory determine if these vents, if condensed, can be treated in the BOD Unit. The treatability of these streams would be dependent on the polyol compounds and their concentrations in these vents.

A modified Othmer vapor-liquid equilibrium apparatus is being used to gather the necessary data.

TMP Unit Support: Identification of Solids in the TMP Sodium Formate Storage Tank (V-161) (Huelle) - An unknown brown solid frequently restricts the rate at which NaFo solution can be removed from V-161 storage tank. Steam cleaning of the tank does not remove the solid. At Operations suggestion, the solid was analyzed for diethylene glycol dilaurate, an antifoam added to the NaFo evaporator (V-1331). Qualitative GC analysis confirmed the antifoam's presence. A letter concerning this problem was published (BKH-14-82). Operations plans to raise the draw-off point in V-161.

Pentaerythritol
B. K. Huelle, R. L. Day

Minimizing UV Absorbance AT 220 nm In Pure PE (Huelle) - The last production run of Pure PE did not produce a single lot of low UV-absorbing material; a sample of finished product from February 16, 1982 had the highest UV absorbance to date, 600 or 6A (50 or .050 A @ 220 nm is the specification).

PE solutions have been analyzed by liquid chromatography using the UV detector set at 220 nm with no success. However, current work using a gel permeation column has shown a peak which correlates with UV absorbance at 220 nm. This peak was trapped using the LC and the sample was concentrated. The sample will be sent to the Tech Center for GC/MS, NMR, and IR analyses. An infrared spectra of the unknown shows absorptions characteristic of unsaturated carbon-carbon bonds and alcohols.

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Potential For PE Dust (Huelle) - A 5-lb. sample of PE dust (from Hopper No. 4) was sent to Hatco for their evaluation of a 20-25% di-PE blend (BKH-13-82).

BOD, Utilities

D. R. Akin, P. W. Young, G. R. Stasney

BOD II Support (Young) - Continued support was provided to BOD II operations. A pulse test of the anaerobic reactor is scheduled for March 9. A vertical COD profile of the reactor will be conducted on March 8. Polyol effluent is presently being added to the test pond at a constant TOD poundage of 2625 lbs/day. This TOD poundage will be increased gradually until all polyol effluent is being treated in BOD.

VCI/Polyol Treatability (Young, Stasney) - An anaerobic-aerobic system has been acclimated to a feed of 5.5 vol.% VCI effluent (COD = 5000-10,000 ppm), 6 vol% polyol effluent (COD = 15,000 - 30,000 ppm) and 88.5 vol.% equalization basin and nutrients. The organic loading (OL) is 0.28 lbs.COD/ft³/day and the aerobic detention time is 2.8 days. The anaerobic outfall COD is 1600-2000 ppm with a stable kinetic efficiency of 50-55%. The aerobic outfall COD is 230-300 ppm. The concentration of polyol compounds will be increased to 7 vol.%.

Polyol Treatability (Young, Stasney) - An anaerobic-aerobic system being fed a feed of 7 vol.% polyol and 93 vol% equalization basin and nutrients. The OL is up to 0.16 lbs.COD/ft³/day after recovery from a setback in the anaerobic reactor. The OL will be raised to 0.28 and the detention time lowered to 2.9 days. When these levels are reached, the reactor will then be used to test the anaerobic reactor response to polyol variability.

Vacuum Truck Content Characterization (Akin) - This study will resume shortly pending the issuance of the approved inspection procedure to determine the cleanliness of vacuum trucks.

Evaluation of Powdered Activated Carbon In Aerobic Optimization (Akin, Stasney) - This study was initiated to determine if powdered activated carbon (PAC) mixed with aeration liquid could expand the capacity of the aerobic system and increase sludge settling velocities. Thus far the COD removal efficiency has been less than or equal to the removal efficiency of the control. The effluent from the PAC system also contains significantly more solids than that of the control. This study is being concluded and documented.

BOD II Aerobic Optimization (Akin) - The purpose of this study is to determine the optimum operating parameters for the aerobic system (during and after polyol effluent acclimation). Parameters that have been investigated are oxygen uptake rates (OUR), ATP levels, dehydrogenase levels, and mixed liquor volatile suspended solids (MLVSS). All of these determinations are an attempt to gauge the activity level of the aerobic biomass. Results of this investigation will be documented. The adequacy of the clarifier at future loadings and the optimum sludge age with polyol effluent will also be investigated.

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Demineralizer Support (Akin) - The Laboratory determined the capacity of the Weak Base Anion (WBA) resin of Train II to be 1.83 meq of $\text{H}_2\text{SO}_4/\text{ml}$. This resin's capacity is adequate for demineralizer use. Several runs of Train II (late January, early February) were halted due to low pH out the WBA. After a couple of split regenerations the volume of the runs returned to normal. Series regeneration is now being used with no problems.

Biodegradation of Branched Polyols (Akin) - There is evidence that some bacteria can degrade branched polyols into carboxylic acids which can be further degraded into carbon dioxide and water by bacteria such as those in our aeration basins. There is a possibility that the bacteria can be found in our own environment. The Laboratory is in the process of collecting various soil samples and a sample of solar pond 11E (which has been found to contain bacteria) in an attempt to locate a strain of bacteria which can degrade branched polyols. The samples will be diluted with water and aerated. Yeast will be used as the nutrient, and the only feed to the system will be a mixture of PE and TMP.

Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
MO Catalyst Screening	Jasek	1	To Establish Alternate Catalyst	Continuing
GC Methanol Oxidation Reactor Optimization	↓	2	Catalyst Evaluation for Possible Efficiency Improvements	November, 1982
Modified Silver Catalyst	↓	1	Catalyst Efficiency Improvements	May, 1982
Formaldehyde Color Problem	Glenister Jasek	1	MOB	April, 1982
Stability of 37% Unstabilized HCHO (For Dow Chemical Co.)	Glenister	1	MOB	May, 1982
Ni(CO) ₄ Method Evaluation	Bustabad	1	Evaluate Current Shutdown and Analytical Procedure	May, 1982
Run VI Oxo Trial Extraction	↓	1	Cost Reduction	May, 1982
Extend Run VII Catalyst Life	↓	1	Raw Materials Savings	May, 1982
Support Paraform Prill Pilot Operation at Bishop	Russell	1	Cost Reduction and MOB	June, 1982
BOD II Aerobic Optimization	Akin	1	MOB	April, 1982
Vacuum Truck Characterization	↓	1	WMSTF Support	May, 1982

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Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
TPP, P ₂ O ₅ Emissions	Akin	1	Emissions Quantification	March, 1982
Evaluate ATP, OUR, and Dehydrogenase Methods	↓	2	MOB	April, 1982
Support Flocculant Plant Trial	↓	2	MOB	October, 1982
Recover PE From VCI Waste Stream	Day	1	Cost Reduction	February, 1982
Formaldehyde Stability	↓	1	MOB	March, 1982
TMP Extractor Optimization	↓	2	Raw Materials Savings	March, 1982
Recover TMP From Formalins in TMP Heavy Ends (V-7474 Residue) Via Alcoholysis	Huelle	1	Raw Materials Savings	May, 1982
Monitor Conversion in PE Reaction System	↓	1	MOB	April, 1982
Methanol Personal Exposure Monitoring	Gary	1	MOB (Environmental Health)	September, 1982
Area Surveys for Misc. Organics	↓	2	MOB (Environmental Health)	February, 1983
Industrial Health Formaldehyde Methods Validation	↓	1	MOB (Environmental Health)	June, 1982

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