

CELANESE CHEMICAL COMPANY
Chemcel Plant
Bishop, Texas

To: Dr. R. R. Graham

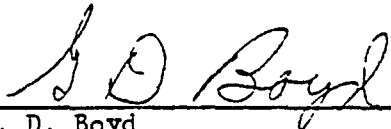
From: G. D. Boyd

GDB-135-81

September 4, 1981

Laboratory Department Summary
August, 1981

A summary of each group's monthly report is attached. Section I contains a summary of the Quality Assurance and Analytical Group activities with tables of analytical statistics, shipments, quality waivers, quality complaints and sample shipping statistics. Section II describes the status of Special Problems Groups and Staff Chemist projects by chemist assignment. A table listing the priorities, justifications, and estimated completion dates of current Special Problems projects is also included in Section II.


G. D. Boyd

GDB:jr

003567

HIGHLIGHTS

- Five tank cars were inspected, loaded with 50% HCHO, and shipped to Hooker Chemical at N. Tonawanda, N.Y. Product quality upon arrival will be followed to correlate tank car liner condition with color build during shipment. Preliminary laboratory testing indicates that a maximum of 1.7 sq. ft. of lining failure is permissible for shipments to Hooker.
- Preliminary results of the VCI waste treatability testing indicates that normal VCI waste is treatable in BOD II. Further study will evaluate co-treatability with polyol effluent over a longer period of time with normal VCI COD concentration variations.
- Rousing studies on phosphoric acid, treated Run VI Oxo catalyst have been completed at CCCTC. This completes the Laboratory study of this Run VI catalyst reclamation alternative. Results are favorable; a report is forthcoming.
- Preliminary results of the BOD II aerobic optimization study indicates that a twenty-five day sludge age is optimal for waste currently being treated.
- A single step processing of the VCI extractor overhead stream to recover 2-ethylhexylamine solvent and PE for recycle and also produce a burnable waste organic stream looks promising.

003568

I. ANALYTICAL GROUP

Competitive Product

One sample of 50% formaldehyde was received from Du Pont. We were unable to return the material to a liquid state. No analyses were performed.

Methanol Oxidation (MO)

Formaldehyde (HCHO) - A 39 day color stability study on seven HCHO storage tank samples was made during July and August. The samples were stored in glass at a constant temperature and analyzed for color build at regular intervals. No noticeable changes in color were noted. A report will be issued.

Methanol Synthesis (MS)

Methanol - Sodium metavanadate as a corrosion inhibitor was added to the Shift Section of the MS Unit. It was discontinued before a detectable level could be found due to the sodium metavanadate being out of specification. The trial will be rescheduled when specification material is obtained.

Utilities and BOD

The Laboratory is continuing to determine the fecal coliform bacteria count in the Plant 101 outfall with corresponding samples being sent to an outside Laboratory (Ernst Davis). No residual chlorine has been found in the samples. The coliform count has ranged from 20 to 490. The maximum acceptable level is 200. No results have been received from Ernst Davis on the duplicate samples.

Special Analytical Assignments

MO Formaldehyde Impurities and Color (F. R. Dow, B. W. Wise) - MO II, III, IV and Weak Formaldehyde Unit profile samples were analyzed in an attempt to identify the component(s) contributing to the formaldehyde color problem.

Currently, two different color problems exist with Chemcel formaldehyde. The first is the iron problem associated with tank linings, and the second is related to the addition of T-185 OH (Weak Formaldehyde) to MO III. Analysis of samples has shown that the product from the Weak Formaldehyde Unit contains less methanol than design (~30% versus design of ~70% MeOH) and 40-60 other components ranging in concentration from a few ppm to ~20%. A component profile of the Weak Formaldehyde is currently being prepared.

003569

Polyol Feed to BOD II (F. R. Dow, B. W. Wise) - The minimum detectable limits of Polyol type compounds are being determined by Capillary GC. This analysis will be necessary to monitor Polyol component addition and/or break through when the Polyol effluent is added to the Plant BOD system.

Analytical General

Anita Reyna, a temporary employee, hired to sample the monitor wells resigned July 31, 1981. She has been replaced by Joe Gonzales an Arthur Brothers employee.

Our temporary summer employee, Susan Ochoa, ended her employment in the Laboratory on August 14th to continue her education at UTSA. She will receive her BS Degree in Chemistry in May, 1982.

Charlie Bull and John Harris, Analytical Group Supervisors, attended a one day seminar in Corpus Christi entitled, "The Advanced Seminar for Supervisors."

Customer Complaints

1. 8-5-81 - Acme Resins, Forest Park, Ill. - Complained of a 50% HCHO car arriving with low assay and high color. Customer is returning car.

2. 8-5-81 - Ashland Chemical Co., Calumet City, Ill. - Complained of a 50% HCHO car arriving with low assay, hazy appearance and color of 100. Notified 8-7-81 that customer will keep product.

Quality Waivers

None this month.				
<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>
Para F-Powder	0	1.1	0	2.8
Para C-Powder	0	0	0	7.3
Diacetone Alcohol	0	1.3	0	0
Formaldehyde	0	0.2	0	0
n-Butyl Acetate	0	5.7	0	1.9
Sodium Formate	0	0	0	1.3
Pentaerythritol-Tech (Lube Grade as Tech)	0	0	0	1.4
Iso-Butyl Acetate	0	3.9	0	0
n-Propyl Acetate	0	0	0	<0.1

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.

003570

Analytical Statistics

	<u>Aug.</u>	<u>Aug. YTD</u>	<u>Previous YTD</u>
<u>Sample Count</u>			
Chemical Section	4310	36121	36871
Instrument Section	<u>2306</u>	<u>21182</u>	<u>18689</u>
Total	6616	57303	55560

Technician Overtime

Chemical Section	21	481	546
Instrument Section	<u>50</u>	<u>310</u>	<u>247</u>
Total	71	791	793

Sample Shipping

Domestic	58	496	532
Export	9	45	20
Plastics	0	9	60
Others	<u>13</u>	<u>79</u>	<u>55</u>
Total	80	629	667

QA Statistics

Shipments	577	5181	5991
Waivers (QD)	0	15	6
Waivers (SQD)	0	8	7
Complaints	2	11	26

003571

II. SPECIAL PROBLEMS GROUP

Process Technology

B. C. Kerr

Process Technology Manual Revision - Text revisions have been completed on all units except PE, Utilities and BOD. Process Engineering has agreed to provide current simplified flow diagrams for each of the units discussed in the Manual.

Formaldehyde Production Color Problem (Kerr, Glenister) - MS Unit data for production rates, efficiency, feed gas sulfur, dimethyl ether and methyl formate have been compared to MO IV color swings. If a correlation exists, it is too weak to determine by our usual methods for data analysis. Fractional distillation of T-185 OH and feed shows a volatile, yellow colored fraction which boils between 68° and 92°C. Attempts to purify the colored material have not been successful. The color fades on standing.

The volatile, yellow colored cut is eliminated when T-185 OH product is carbon treated with a DARCO vegetable carbon. The colored fraction is also eliminated by filtration and neutralization of T-185 Feed. When the feed is neutralized and filtered, both the overhead and residue have a color of <5. Iron contamination in T-185 feed indicates a severe corrosion problem may exist in T-275 OH.

Although the data obtained indicates that T-185 OH can be treated to reduce its effect on MO II or MO III color, planned trial runs in T-185 and selective feeding to MO II offer a more attractive solution to the problems associated with T-185 OH.

Methanol Oxidation, Formaldehyde Blending

T. A. Jasek, D. T. Biernacki, J. F. Glenister, J. D. Presley
R. L. Day, J. C. Bustabad, B. K. Huelle

MO Unit Support (Jasek, Glenister, Presley) - The Laboratory conducted analytical AMR's at the following Units:

MO III "B" Train - August 5, 1981 - Start-up

<u>Indicated</u>	<u>Analytical</u>
0.89-0.90	1.32
0.89-0.90	1.16
0.90-0.91	1.15
0.90-0.91	1.13

MO II - August 14, 1981

<u>Indicated</u>	<u>Analytical</u>
0.940	0.86
0.940	0.88
0.95-0.96	0.92*

* Adjustments made in sampling apparatus.

003572

The Laboratory inspected the liner condition of two cars returned from Hooker Chemical which had contained off-color 50% formaldehyde. Tank cars CELX 13203 and CELX 13209 were examined and significant deterioration of liner was noted in the dome and valve regions.

The Laboratory inspected and documented the condition of liners in five tank cars used to ship 50% formaldehyde to Hooker during the week of August 24-28. This information will be used to develop a correlation with regards to liner deterioration and color in product on longer shipments. All the cars inspected and used for 50% Hooker shipments had less than 1 sq. ft. of liner failure.

Laboratory MO Micro Unit (Jasek, Biernacki) - Work is continuing on defining improvements which can be made in the catalyst rewash program. Ultrasonic cleaning of silver catalyst rather than just washing, shows a substantial improvement in efficiency over just washing the catalyst. However, it's only a slight improvement over using a topped catalyst charge. Samples of catalyst have been prepared which were further treated, but no operational data have been obtained.

HCHO Color Vs. Reformer CO:H₂ Ratio (Day, Bustabad) - Attempts were made to correlate the CO:H₂ ratio in the DPG reformer to times when all of the MO units were off-test in color. According to some patent literature, small variations in the CO:H₂ ratio in a system similar to ours will produce different types and amounts of impurities.

A weak correlation appeared to exist between variations in this ratio in the DPG and periods when all three MO's were off-test in color. CO:H₂ ratios in the Selas and the Lurgi convertor were also looked at, but the best correlation was with the DPG ratio. The DPG had much wider variations in the ratio than the Selas or the Lurgi.

The idea was abandoned, however, when the correlation could not be improved by any means.

MO Color Development Testing (Presley) - Testing of MO and Blending Unit storage tanks has been completed. No significant color build was seen in any of eleven sets of samples (taken over a three week period and held for 21 days). With the exception of several samples taken early in the test, most all of the test samples remained less than 10 Pt-Co units. The highest recorded color was 15 Pt-Co units.

Twelve day color development tests with tank car cleaning rack soaps and Blending Unit resin and tank scraping samples ended with essentially no color build.

Complaints of high colors (35 to 100+ Pt-Co units) in 50% HCHO (received at Hooker Chemical Co.) were determined to be due to high levels of iron. The

003573

cause of high iron content was tank car lining failure (confirmed by inspection of returned cars). Test coupons coated with tank car lining material (Placite 3066) were used to determine vapor space and subsurface corrosion rates. The first set of tests showed that vapor space corrosion of "scratched" coupons was extremely rapid. A thin layer of particulate iron (oxide?) was seen to form within moments and was easily washed into the HCHO below by sloshing the test container. However, overnight a heavy iron (oxide?) coating had formed on the vapor space "scratched" apparently affording it some protection to the earlier noted rapid corrosion. The subsurface "scratched" coupon showed no visible evidence of immediate problems. When left overnight, however, it visibly contributed much more iron to the HCHO than the vapor space "scratch". In both cases the "scratched" surface areas were the same.

In an effort to alleviate the burden of the numerous tank car patchings and relinings now needed, several quick treatment methods are being tested.

Nitrogen blanketing of the vapor space was shown to hinder corrosion for only a few hours (<3 hours).

Korrid (a carbon steel passivating agent) was used to treat vapor space and subsurfaced "scratched" coupons. In both cases no apparent benefit was noted. A vapor space "scratched" coupon treated with Korrid and blanketed with nitrogen showed only ~4 hours of protection.

Two varieties of high temperature engine block paint were tested for tank car lining adhesion in 50% HCHO and for corrosion protection of vapor space and subsurface "scratched" coupons. Both the aluminum and the titanium dioxide based paints have excellent adhesion characteristics. However, only the titanium dioxide paint used in the vapor space shows possible use as a temporary patching agent. A possible quick-patch paint is being obtained from the tank car lining manufacturer. Test will begin ASAP.

In the meantime, tests are underway to attempt to determine the maximum surface area exposure (subsurface) that can be allowed for long distance (10-14 days) shipping. A series of five known "scratched" surface area coupons has been set up. The iron build in the HCHO is being measured. Preliminary results indicate the leach rate of iron into the HCHO is about 0.0124 ppm Fe per ft.² per day per 20M gal. tank car. Or in other words, for a 14 day shipment to arrive with an acceptable level of iron (0.3 ppm) a tank car should have less than 1.7 ft.² of subsurface lining failure.

Additional tests are being conducted to determine if there is a corrosion difference between crude methanol produced and spec. methanol produced HCHO.

Formaldehyde Stabilizer Study (Day) - In a formaldehyde stabilizer study performed in January, it was found that HCHO directly off the finishing column in MO IV had longer stability times than HCHO which had passed through the ion exchange resin bed. Data gathered in July indicate that one possible contributor to the difference in stability is the difference in acid concentration between the two sources of HCHO. However, the actual contribution of acid level to HCHO stability will need to be better established with additional data.

003574

Stabilizer studies in June and July showed a reduction in stability compared to a study in January. Some of the data is presented below:

	<u>Study in Jan.</u>	<u>Study in June</u>	<u>Study in July</u>
Stability Time, In Days	27-40	17-27	8-15
Color, Pt-Co Units	<5	10	7

These samples all used 51% resin treated HCHO with 12 ppm metalose stabilizer and all had the same acid concentration. All samples were stored at 40°C so that they would go off test in a reasonable length of time. Stability time is quoted as a range, with the first day of the range as the day of initial precipitation and the last day of the range as the day the sample was determined to be off-test.

Two obvious differences in the HCHO used for the studies are that the HCHO used in January was not colored and was made prior to crude methanol as feed to the MO's. The HCHO used in June and July was colored and was made with crude methanol feed.

Future work will determine the variability in HCHO stability within and between each of the MO units and check our published stability for 50% HCHO which is 30 day at 49°C.

HCHO Assay Discrepancy Between Celanese and Acme Resins (Huelle) - Dallas has requested Bishop to evaluate Acme's assay method. There has always been a .3 to .5 wt.% bias between our results and Acme's when assaying 50% HCHO. After running several 50% HCHO samples by Celanese's indicator method and Acme's pH method, a difference ranging between .5 to 1.0% was determined. It appears that some part of the discrepancy lies in the adjustment of the HCHO solution pH (3.5 to 4.5) to the pH equisalance point (9.3) in Acme's method before addition of sodium sulfite. Results indicate a .15 to .8 wt.% variation due to the adjustment. The amount of titer required to adjust the sample pH is not enough to account for the difference in assay. Further work is necessary to determine why the pH adjustment of HCHO solution affects assay, if other factors are important, and which assay method is most correct.

BOD - Utilities

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

BOD II Support (Young) - Continued support was provided to BOD II operations. Findings from the investigation of the aerobic upset in July will be documented.

Polyol Treatability in BOD II (Young, Stasney) - A laboratory anaerobic-aerobic system is currently being fed a feed in which 55% by volume (33% COD) is polyol steady state effluent. The organic loading was decreased from 0.21

003575

1b. COD/ft³/day to 0.15 lbs.COD/ft³/day due to high aerobic outfall CODs. The outfall COD decreased to 185 ppm at the higher detention time (3.7 days). The operating conditions will now be returned to OL=0.2 and detention time=3.5 days. The concentration of polyol effluent will be further increased to ~7% by volume (41% COD) during the study.

The sampling and analysis of polyol unsteady state streams is completed. Treatability studies of these unsteady state streams is being formulated. A report documenting previous laboratory studies of polyol treatability was published.

VCI Waste Treatability (Young, Stasney) - VCI waste is being fed to a laboratory anaerobic-aerobic system at a feed concentration of 5.5% by volume (~7.5% COD). At an OL=0.2 lbs.COD/ft³/day and detention time of 3.5 days, the aerobic outfall COD is 185 ppm. The concentration will be varied to simulate what would occur if the waste were fed to BOD II.

Sludge Disposal - Aerobic Digestion (Akin, Stasney) - A sample of concentrated solids from the static digestion tank (no feed) was shipped to Arus Andritz for analysis and dewatering. The flow through tank (fed overflow) continues to operate at steady state. These aerobic digestors are being operated in conjunction with Environmental Dynamics, Inc. to support evaluation of sludge disposal alternatives.

TPP and TPPO (and P₄O₁₀) Emissions From the Waste Liquid Boiler (Akin) - Examination of the waste liquid boiler stack revealed no adequate sampling location. At this point there are three possible alternatives: 1) Sampling ports could be installed in the existing waste liquid boiler stack, 2) A sample of T-210 residue could be sent to a vendor where it could be burned in a small incinerator and the total stack gas could be scrubbed, or 3) Sample when the new waste liquid boiler (equipped with four sampling ports and OSHA approved sampling platform) comes on line in the first quarter of 1982. These alternatives are currently being discussed.

BOD II Aerobic Optimization - Sludge Age Study (Akin, Stasney) - Two aerobic tanks, one at 25 days sludge age and the other at 35 days, are being fed anaerobic recycle from BOD II at a 3 day detention time. The 25 day tank shows a higher sludge settling velocity than the 35 day tank. Both remove approximately 80% of the feed COD. Another aerobic tank held at a 17 day sludge age was discontinued due to low COD removal and the inability to maintain biomass with the relatively short sludge age. The 25 and 35 day sludge age study will continue to determine the optimum age for the BOD II aerobic section.

Aerobic Treatment of Polyol Sump (Akin, Stasney) - A study is underway to determine if undiluted polyol effluent can be treated by aerobic methods only. A laboratory unit is currently being acclimated to a dilute solution of polyol sump and equalization basin (5 vol % polyol). The detention time is 6 days with a 35 day sludge age.

003576

Methanol Synthesis
J. C. Bustabad

Nickel Tetracarbonyl Analyses of DPG Related Streams - Nickel tetracarbonyl $[\text{Ni}(\text{CO})_4]$ tests completed August 2nd, 10th, and 17th in DPG related streams showed concentrations of $\leq .001$ ppm. A letter was written detailing the results of these analyses.

Nickel Tetracarbonyl Analyses of 5MM Girdler Nitrogen Purge - Nickel tetracarbonyl $[\text{Ni}(\text{CO})_4]$ tests completed August 25th on the nitrogen purge from the North and South banks of the 5MM Girdler reformer showed concentrations of $\leq .001$ ppm.

Sodium Metavanadate as a MEA Corrosion Inhibitor - Laboratory support was provided for the brief sodium metavanadate (NaVO_3) Plant trial. A letter was issued requesting that the analytical group be responsible for sodium metavanadate analyses during the Plant trial. Laboratory technicians were given training on the NaVO_3 method. The Plant trial was discontinued shortly after it was begun because the NaVO_3 received for use in the Plant was off-specification.

Laboratory Distillations of Crude MeOH and Crude MeOH Blended with Contaminated MeOH (V-650) - Evaluation of samples from the Laboratory distillations of crude MeOH and crude MeOH blended with contaminated MeOH (V-650) is in progress. Upon completion of these analyses, results will be reported in a letter.

Tracor[®] GC Model 550 - Good reproducibility is being obtained on samples run on the Tracor GC Model 550. The instrument was "brought up" this month and will be "kept up" so that short notice samples can be run for sulfur compounds.

Flarestack Fugitive Leak Study - A composite sample of gas going to the flare was collected and taken to CCCTC for evaluation on August 7th. The purpose of this sampling was to get fugitive gas leak data for the Selas Reformer.

Oxo, Butanol
J. D. Presley

Reactor Stability/Accountability - Average reactor component accountability for the month of August is 87.6%. Priorities have delayed further work on the TPP accountability.

Rhodium Accountability - Catalyst samples taken from the Oxo reactor while it has been down this month indicate a rhodium accountability of ~94%. Run VII rhodium losses out T-210 Residue now total 6.7 pounds.

Continually increasing rhodium concentrations in T-210 residue indicate initial stages of reactor foaming. Additionally, troubles (excessive foaming) with sampling while the reactor was down and difficulties in obtaining accurate

003577

(consistently low) reactor level readings during operation are believed early warning signs of foaming. Consequently, extra care is advised during the next start-up.

Improved Rhodium Recovery - MEA contaminated Run VI catalyst samples treated with 20% phosphoric acid (H_3PO_4) and two and four water washings were sent to R. G. Sheppard at CCCTC for Micro Unit rousing studies. Untreated Run VI catalyst and current Run VII catalyst were also studied. The results are given below:

<u>Sample</u>	<u>Rousing Factor</u>	<u>Rousing Factor After Addition of n-BuH to total ~20%</u>
Run VI (Untreated)	1.6	1.5
Run VI (20% H_3PO_4 + 2 H_2O Wash)	1.5	1.4
Run VI (20% H_3PO_4 + 4 H_2O Wash)	1.6	1.5
Run VII	2.1	1.5
(n-BuH ~35%)		

Based on these results and earlier activity testing and aldol testing it is believed the Run VI catalyst can be successfully treated in the Plant for reactor use. It is currently believed that treated catalyst could best be used for addition rhodium to the present Run VII. A report will be written.

Trimethylolpropane
R. L. Day, S. G. Smith

TMP Tubular Reactor Scale (Day) - The solubility of some TMP reactor scale gathered in July was tested in roughly 15 solvents this month. These solubilities were then compared to the current solvent, ethyl acetate (EtAc). It was found that amines worked the best on the scale, by breaking the polymer like sheath into small fluffly pieces. The current solvent, EtAc, softens the scale but does not break it apart. Pyridine was superior to any of the amines tried. However, pyridine is not a very practical solvent for use on a commercial basis.

747 Residue Methanolysis (Day) - Previous economics of a proposed scheme to recover TMP from V-747 residue were not promising. The scheme included a methanolysis of TMP linear formal followed by a one stage extraction of TMP for recycle using TMP extractor residue. The remaining organics contained too much sodium formate to allow burning to recover fuel value. Studies were initiated to modify the scheme to require less methanol and produce a burnable waste stream. This would significantly improve the economics.

The apparatus for the methanolysis was built this month, and several runs were made. However, due to poor heat control, modifications of the original apparatus are being made and no data are available yet.

003578

Formation of Formals in the TMP HCHO Stripper Column (Smith) - Laboratory tests showed that TMP monocyclic formal (TMPMCF) can be steam stripped from water-HCHO-TMPMCF solutions, however, no TMPMCF was found to be formed or stripped overhead in the TMP HCHO stripper column, T-202. A report on this work has been submitted.

Acetates, Paraform, Formcel[®] Products
B. K. Huelle

Attempts to Produce Butyl Acetate Using a Strong Acid Resin Bed - An attempt was made to feed separately butanol and acetic acid to an AR-15 (strong acid) resin bed to produce butyl acetate. It was hoped that the acetate and water would phase, the water and small amounts of acid removed through the bottom with acetate and butanol removed overhead. Since the ester reaction is an equilibrium reaction, removal of the water from the system was essential. Though ester was produced, the phasing did not occur and more importantly water could not work its way down through the resin bed. No further work is planned.

1,3-Butylene Glycol
J. E. Russell

V-778 Residue Burning - Samples of V-778 residue are being collected again for ash analysis. The unit has not been running long enough to collect a good sample set. The residue will be analyzed for ash and sodium and the results related to a caustic balance around the unit.

Pentaerythritol
L. M. Harvey, B. K. Huelle, S. G. Smith, J. E. Russell

Recovery of PE from VCI Extraction Waste Stream (Harvey) - Studies indicate that PE can be removed from VCI extract (PE in 2-ethylhexylamine solution) in a single step which includes recovery of 2-ethylhexylamine via an azeotropic distillation with water in WIP recycle and partitioning of PE to the WIP recycle in the reboiler. This process would result in efficient recovery of the 2-ethylhexylamine (2EHA) extraction solvent while providing an aqueous PE stream of equal or better quality than WIP recycle. By utilizing WIP recycle as the source of water to satisfy the azeotrope, the energy penalty for the process will be minimized since this water is normally removed in the PE "A" Evaporator.

In the event that WIP recycle is not available in sufficient quantity relative to the volume of VCI extract, studies are in progress to generate material balance data where a fraction of the aqueous phase of the azeotrope is recycled back to the distillation column.

Determine Potential of PE Dust for Use as Lube-grade PE (Harvey) - 250 lbs. of Tech-grade PE were sent to Rotex, Inc. for evaluation of commercial screening equipment for isolating a high di-PE product. Samples received from Rotex, Inc. indicate that a 100- or 200-mesh may not be adequate. Rotex will evaluate 270- and 325-mesh screens next. A report will be written with Operations upon completion.

003579

Minimizing U.V. Absorbance at 220 nm in Pure PE (Huelle) - After running a high U.V. absorbing PE solution through a XAD-2 resin bed, 90% of the absorbance was removed from the PE solution. The XAD-2 resin was washed with methanol and several fractions taken. The most colored fraction was sent to the Tech Center for GC/MS evaluation. Results indicated some very polar compounds in very small quantities which could not be identified, PE and formals, methyl ketones (also not completely identifiable), and 2,3-dimethyl, 1,4-hexadiene. Work will continue as time allows.

Formation of Formals in the PE HCHO Stripper Column (Smith) - The formal content of PE HCHO Stripper Column (T-286) residue was compared to that of T-286 feed stripped of HCHO under "mild" conditions in the Laboratory. It was found that no additional formals are being produced in T-286. A report on this work has been submitted.

PE Hydrolysis (Russell) - The final Laboratory report has been written and is in the process of being approved. It will be issued in September.

Environmental Health

C. E. Gary, K. V. Parker, S. G. Smith

OSHA Monitoring (Gary, Parker) - Additional follow-up monitoring for noise and formaldehyde exposures is being done to improve the statistical data base.

A Plant-wide follow-up monitoring for personal formaldehyde exposures was completed and reported. (CEG-55-81, KVP-14-81).

The potential formaldehyde exposures in two temporary office buildings was completed and reported (CEG-54-81, KVP-13-81).

The Lion Formaldemeter obtained from MDA Scientific was demonstrated to be equivalent to the Drager 0.5/a formaldehyde tubes for spot analysis of formaldehyde exposures (CEG-56-81).

Identification of Unknown Drum Material (Smith) - A sample of liquid material from an unlabeled drum was submitted for identification. Identification of the material, thought to be a herbicide, is necessary to determine the method of its disposal and to allow shipment if required. A report will be submitted once positive identification is made.

Special Problems General

- ° Susan Smith transferred to the Tech Center effective September 1st.
- ° Leanne Harvey was promoted to Senior Process Chemist effective September 1st.
- ° Jim Russell was promoted to Process Chemist effective September 1st.

003580

- ° Chuck Gary and Kathryn Parker were transferred from Hub Thigpen's group to Otts Schnellenberger's group effective September 1st.
- ° Tom Jasek and Joann Glenister were transferred from Otts Schnellenberger's group to Hub Thigpen's group effective September 1st.
- ° Tom Jasek and Joann Glenister attended a MO development meeting at the Tech Center on August 21st.
- ° Jim Presley, Tom Jasek and Jane Bustabad attended a seminar on BASIC Programming for Chromatographers on August 27th and 28th.

003581

Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
Run VI Catalyst Cleanup and Reactivation	Presley	1	Raw Materials Savings	September 15, 1981
MO Catalyst Screening	Jasek	1	To Establish Alternate Catalyst	Continuing
Formaldehyde Product Color	Jasek Glenister	1	MOB	Continuing
GC Methanol Oxidation Reactor Optimization	Jasek ↓	2	Catalyst Evaluation for Possible Efficiency Improvements	November, 1981
Modified Silver Catalyst	↓	1	Catalyst Efficiency Improvements	January 1, 1982
Sinter Test Evaluation	Glenister	1	Establish Alternate Suppliers	December, 1981
TPP, P ₂ O ₅ Emissions	Akin	2	Emissions Quantification	April 1, 1982
Sulfur Adsorbents for Methane Feed	Bustabad ↓	1	Reduce Sulfur Contamination of Reformers Catalyst	January 1, 1982
N ₁ (CO) ₄ Method Evaluation	↓	2	Determination of Method's Accuracy	December 1, 1981
BOD-II Aerobic Optimization (Sludge Age Study)	Akin ↓	1	MOB	October, 1981
Sludge Disposal (Aerobic Digestion)	↓	1	MMSTF Support	October 1, 1981

003582

Current Special Problems Projects

Project	Chemist	Priority	Justification	Estimated Completion Date
Polyol Treatability	Young	1	MOB	November 1, 1981
VCI Waste Treatability (Phase I)	↑	1	MOB	January 1, 1982
TMP - Extractor Optimization	Day	1	Raw Material Savings	October, 1981
Formaldehyde Stability	↑	1	MOB	November, 1981
OSHA Monitoring	Gary	1	Insure Employee Health and Safety - OSHA Compliance	Continuing
Eliminate or Reduce the Salt Content on V-778 (1,3-BG heavy ends) to Allow it to be Burned Without Excessive Particulate Emissions	Russell	1	Solve Environmental Problems and Recover Energy by Burning Stream	November, 1981.
Develop a way to Monitor Conversion in the PE Reaction System	Huelle	1	MOB (Quality) and Raw Materials	November, 1981
Determine the Potential of PE Dust for Use as Lube-grade PE - Assist Production Personnel as Needed.	Harvey	1	Supply Growing Market for PE	October, 1981
Recover PE from VCI Extraction Process Organic Stream	↑	1	Raw Materials Savings	November, 1981

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