



CELANESE CHEMICAL COMPANY
Chemcel Plant
Bishop, Texas

To: Dr. R. R. Graham

From: G. D. Boyd

GDB-166-82

April 12, 1982

Second Quarter Work Plans
Laboratory Department

Attached are the Second Quarter Work Plans for the Laboratory Department.


G. D. Boyd

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000802

SPECIAL PROBLEMS - Group I (MS, Oxo/BuOH, MO, Paraform, Esters, Formcels™
H. H. Thigpen, Group Leader

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
	<u>Paraform, Formcels, Esters, Weak Formaldehyde -P. W. Young, J. E. Russell</u>	
1	Meet production plans and quality specs. (MOB)	Maintain frequent contact with units and provide technical support as needed. (Young)
1	Make paraform prills in a pilot unit at Bishop. (MOB, CR)	Identify and define the effects of key variables which are important in making and drying paraform prills. Effects of additives, (both type and amount), temperature, prill size, ageing and humidity of drying air will be studied. The effects of these parameters on rate of assay increase, HCHO losses, dusting, molecular wt. change, solubility and rate of melting point change will be studied. Continue through second quarter. (Russell, Young).
	<u>Methanol Oxidation, Formaldehyde Blending, Loading Rack - J. F. Glenister</u>	
1	Meet production plans and quality specs. (MOB)	Maintain frequent contact with Operations, help identify problem areas and supply technical support as needed.
1	Determine efficiency losses to specific components in MO IV and and MO III. (CR)	Sample MO IV absorber vent and MO III vent and analyze for specific by-products, MeOH and HCHO. Calculate efficiency losses to each component.
1	Minimize product color. (MOB)	Continue to monitor product color to detect any improvements which may result from improved T-185 side stream decanter operation or new decanters planned for MO II and MO III side streams. Continue through second quarter.

000803

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
2	Determine whether the sinter test is important and qualify Engelhard as an alternate supplier. (MOB,CR)	Continue to collect sinter test data and correlate it to catalyst performance. Evaluate performance data on Engelhard. Late second quarter.
2	Develop improved washing technique for catalysts. (CR)	Continue evaluation of ultrasonic cleaning of used catalysts. Late second quarter.
2	Develop better catalysts (CR,MOB)	Continue development of the GC/MO reactor for rapid catalyst evaluation.
1	Reprocess silver catalysts at Bishop. (CR)	Support Process Engineering study study as needed.
1	Improve the frequency of "good" catalyst startups. (CR)	Collect data on temperature profile and other parameters during catalyst startups and correlate to performance.
1	<u>MS - P. W. Young</u> Meet production plans and quality specs. (MOB)	Maintain frequent contact with Operations, help identify unit problems, and supply technical support as necessary.
1	Reduce corrosion in MEA systems. (CR,MOB)	Provide technical support for Process Engineering MEA system corrosion inhibitor trial.
1	Improve performance of carbon beds for removing sulphur containing compounds. (MOB,CR)	Support Process Engineering and Production as needed. Evaluate potential methods to regenerate spent carbon.
1	Ensure safe unit shutdowns. (MOB)	Conduct a literature search to better define the temperature range of nickel tetracarbonyl formation, and evaluate the current reformer shutdown procedure with respect to the temperature at which sampling should begin for nickel tetracarbonyl detection.

000804

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
	<u>Oxo/Butanol - T. A. Jasek</u>	
1	Meet production plans and quality specs. (MOB)	Maintain frequent contact with Operations, help identify unit problems, and supply technical support as necessary.
1	Extract inactive rhodium from reactor solution. (CR)	Support cursory design and economics development for inactive rhodium extraction project as required.
1	Keep account of rhodium charged to the reactor. (MOB)	Assist in maintenance of rhodium accounting.
1	Clean up amine contaminated Run VI catalyst for reuse.(CR)	Complete lab pilot tests with phosphoric acid extraction of two 250 gal. batches by early third qtr. Complete Plant test by mid-second quarter.
1	Extend Run VII by water or water/MeOH washing (CR)	Support Plant test as required.
2	Continuously add rhodium to the reactor. (CR,MOB)	Determine the stability of rhodium nitrate-glycol solutions in support of Process Engineering's continuous rhodium addition system.
1	Reduce foaming in reactors. (CR,MOB)	Follow Bay City reactor foaming study and evaluate with respect to the Bishop Oxo Unit.
1	Use poly alpha olefin (PAO) as reactor solvent. (CR,MOB)	Support Plant test as required.
	<u>Industrial Health - C. E. Gary, K. V. Parker</u>	
1	Formaldehyde Methods Validation (MOB)	Validate Celanese and NIOSH chromatropic-acid methods for determining HCHO in air; evaluate Monsanto 2,4-DNPH method for determining HCHO in air; field validate Celanese, NIOSH and Monsanto methods and two types of passive dosimeters (3M and Du Pont) (Gary)

000805

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
1	Industrial Health Methods Validation (MOB)	Serve as Bishop Laboratory representative to the Industrial Hygiene Analytical Committee. (Gary)
1	Noise Exposure Monitoring (MOB)	Complete personal noise exposure monitoring for Maintenance job classifications; conduct additional monitoring of personnel in support of noise control studies program. (Parker)
2	Nuisance Dust Monitoring (MOB)	Determine personal exposure to nuisance dust in the PE Unit. (Parker)
2	Silica Monitoring (MOB)	Conduct additional sampling for personal exposure to silica in the sandblasting area and the ABL shop downwind to establish a better statistical base. (Parker)
2	Methanol Exposure Monitoring (MOB)	Monitor personal exposure to methanol in potential exposure areas. (Parker)
2	Area Surveys for Organics (MOB)	Conduct area surveys for organics other than formaldehyde and methanol. (Parker)

000806

SPECIAL PROBLEMS - Group II (Polyol, BOD, Utilities)
L. M. Harvey

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
1	<u>Waste Treatment; Utilities - D. R. Akin, R. K. Kaderlik, G. R. Stasney</u> BOD Unit Support (MOB)	Maintain frequent contact with Operations, help identify problem areas, and supply technical support as needed. (Akin)
1	Utilities Unit Support (MOB)	Maintain frequent contact with Operations, help identify problem areas, and supply technical support as needed. (Kaderlik)
1	Polyol Addition to BOD (MOB)	Support Operations in addition of polyol effluent to BOD. (Akin)
1	Treatability of Unsteady-state Polyol (MOB)	Continue to evaluate the treatability of polyol effluent at unsteady-state flows and compositions. (Akin, Kaderlik, Stasney)
1	Treatability of VCI Effluent (WMSTF Support)	Evaluate the treatability of VCI effluent in BOD II with increasing amounts of polyol effluent. (Akin, Kaderlik, Stasney).
1	Vacuum Truck Characterization (WMSTF Support)	Complete characterization of vacuum truck contents to support waste disposal process design; support SHE department in development of procedures for determining method of disposal. (Akin)
1	BOD Aerobic Optimization (MOB)	Determine optimum operating parameters (oxygen uptake rate, ATP level, dehydrogenase level, sludge age) for the BOD II aerobic system (with addition of polyol effluent), and reconfirm adequacy of the clarifier at future loading by developing flux curves. (Akin)

000807

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
2	Flocculant Evaluation (MOB)	Support Process Engineering during Plant trial of flocculant addition. (Kaderlik)
1	WMSTF Objectives (WMSTF Support)	Supply technical help and conduct Laboratory studies as necessary to support achievement of WMSTF goals. (Akin,Kaderlik)
1	Aerobic Treatment of Polyol Effluent (MOB)	Isolate bacteria which can treat branched polyalcohols. (Akin)
1	TPP, TPPO Emissions (MOB)	Quantify TPP and TPPO emissions resulting from T-210 residue incineration. (Akin)
2	Cooling Water Treatment (MOB)	Support Operations and Corrosion Engineering in cooling water treatment program. (Kaderlik)
1	<u>Diacetone Alcohol - J. C. Bustabad</u> DAA Unit Support (MOB)	Maintain frequent contact with Operations, help identify unit problems, and supply technical support as needed.
1	<u>1,3-Butylene Glycol - J. C. Bustabad, R. L. Day</u> 1,3-BG Unit Support (MOB)	Maintain frequent contact with Operations, help identify unit problems, and supply technical support as needed. (Bustabad)
1	Supply Nepera With Crotonaldehyde	Provide Laboratory support as needed in developing process to coproduce crotonaldehyde in the 1,3-BG Unit. (Day)
1	Minimize V-778 Wash-outs (MOB)	Identify satisfactory solvent(s) to be used to remove fouling from V-778 during shutdowns; support Operations during Plant trial. (Bustabad)
2	Eliminate T-218 (CR)	Provide Laboratory support as needed to evaluate the proposal to eliminate the low-odor column (T-218). (Bustabad)

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<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
	<u>Trimethylolpropane - J. C. Bustabad, R. L. Day, B. K. Huelle</u>	
1	TMP Unit Support (MOB)	Maintain frequent contact with Operations, help identify unit problems, and supply technical support as needed. (Huelle)
1	Recover TMP From V-747 Residue (CR)	Continue Laboratory studies to improve the economics of the proposed methanolysis of TMP heavy-ends to recover TMP; evaluate neat hydrolysis of V-747 residue with and without T-205 overhead; evaluate hydrolysis of V-747 feed. (Huelle)
1	TMP Expansion (MOB/Unit Expansion)	Support CCCTC and Process Engineering as needed to evaluate any changes proposed for the unit expansion. (Bustabad)
1	Extractor Optimization to Increase TMP Efficiencies (CR)	Conduct Plant trials to vary operating parameters as previously recommended to determine optimum operating conditions. (Bustabad)
2	Determine Efficiency Losses and Environmental Impact of Condensing Concentrator Vents (MOB)	Develop VLE data to determine efficiency losses and to determine the increase in loading (hydraulic and COD) to BOD II as a result of condensing the TMP concentrator vents. (Day)
	<u>Pentaerythritol - R. L. Day, B. K. Huelle</u>	
1	PE Unit Support (MOB)	Maintain frequent contact with Operations, help identify unit problems, and supply technical support as needed. (Day)
1	Recover PE From VCI Waste Stream (CR)	Evaluate back extraction for recovery of PE from the extract generated in VCI's future extraction of AML with 2-ethylhexylamine. (Day)

000809

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
1	Low UV absorbance PE Specification for Du Pont (MOB)	Continue to monitor PE Unit operating parameters during production of pure-grade PE for Du Pont; continue studies to determine source and identity of impurities causing high UV absorbances at 220 nm in PE; maintain contact with Du Pont to coordinate efforts. (Huelle)
2	Low Linear Formal Specification for Dow (MOB)	Continue to confirm intralot consistency of low-formal shipments to Dow. Determine if there is another parameter which might provide a better indication of performance of pure-grade PE with respect to the color of the Dow product. (Huelle)
2	Monitor PE Reaction (MOB)	Develop method to determine concentration of pentaerythrose (reaction intermediate) in order to monitor the completeness of the PE reaction. (Huelle)
2	Determine Efficiency Losses and Environmental Impact of Condensing "A" Evaporator Vent (MOB)	Develop VLE data to determine efficiency losses and to determine the increase in loading (hydraulic and COD) to BOD II as a result of condensing PE "A" Evaporator vent. (Day)
2	<u>MO, Formaldehyde Blending - R. L. Day</u> Variability Study of Stability of HCHO Solutions (MOB)	Determine variability in stability of HCHO solutions with respect to impurities, assay, age, etc. (Day)

000810

STAFF CHEMISTS
B. C. Kerr, F. R. Dow

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
1	Solve the Formaldehyde "Scum" Problem at Dow (MOB)	Develop and standardize a performance test for determining suitability of Celanese HCHO in Dow's Versene™ reaction. Use performance test to evaluate various known impurities in HCHO. (Kerr)
2	Synthesis of Di-PE (Process Development)	Continue investigation of catalytic conversion of mono-PE to di & tri-PE. Determine purification requirements for converted product. Determine optimum yield and efficiency. (Kerr)
1	Solve the Formaldehyde "Scum" Problem at Dow (MOB)	Identify the impurities which cause scum in Dow Versene™ made from Celanese HCHO. (Dow, Wise)
1	Minimize HCHO Product Color (MOB)	Provide analytical support for the HCHO color problem. (Dow, Wise)
1	MOB	Continue use of capillary GC for quantitative identification of impurities in Chemcel products. (Dow, Wise)
1	Support the Rainfall Runoff Task Force (MOB)	Continue monitoring Plastics and Chemical Co. rainwater runoff. (Wise)
2	MOB	Install new AA in Special Problems Lab; determine optimum operating conditions for critical elements. (Dow, Wise)
2	MOB	Develop a capillary column procedure to monitor methanol and dist. column components for MS catalyst life and activity. (Dow, Wise).

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2nd Quarter Work Plans

<u>PRIORITY</u>	<u>OBJECTIVES</u>	<u>PLANS</u>
2	Support WMSTF Effort to Restore Solar Ponds	Determine organic components in pond bottom water washings. (Dow, Wise)
3	MOB	Develop a standardized procedure for filtration of bacteria from BOD, and determine its possible effect on COD. (Dow, Wise)
3	MOB	Determine variation of volatile fatty acids in BOD systems. Correlate with BOD upset and possibility of predicting BOD upsets. (Dow, Wise)
3	MOB	Optimize GC utilization in Special Problems Lab. (Dow, Wise)

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