

SHELL OIL COMPANY SHELL CHEMICAL COMPANY
DEER PARK MANUFACTURING COMPLEX

PLAINTIFF'S EXHIBIT

SH-2407

DATE NOVEMBER 11, 1977

TO HEAD OFFICE - MANUFACTURING - FROM SUPERINTENDENT -
HEALTH AND SAFETY - MANAGER ENVIRONMENTAL CONSERVATION -
DEER PARK MFG. COMPLEX

SUBJECT TOXIC SUBSTANCES CONTROL
ACT (TOSCA) INVENTORY LIST

We have reviewed your memorandum of September 8, 1977, with regard to all products, raw and process materials and intermediate streams manufactured or consumed at Deer Park Manufacturing Complex. The attached lists summarize additions to the attachments of the September 8 subject memorandum.

If you have any questions concerning this survey, please contact our V. J. Moravec.

Original Signed by R. V. Mattern

R. V. Mattern

VJM:oc

Attachments

bc: H. J. Bettencourt/K. R. Arnold
R. Lopez/H. R. Campbell
R. V. Mattern ~~THIS COPY FOR~~
J. L. Rivard
C. H. Rivers/V. J. Moravec
File
Env. Con. Chron (2)

DPMC-09045

LAM 002932

SHELL OIL COMPANY SHELL CHEMICAL COMPANY
DEER PARK MANUFACTURING COMPLEX

DATE OCTOBER 31, 1977

TO DEER PARK MANUFACTURING COMPLEX -
 SUPERINTENDENT ENVIRONMENTAL
 CONSERVATION

FROM MANAGER PROCESS ENGINEERING
 - RESINS - DEER PARK
 MANUFACTURING COMPLEX

SUBJECT TOXIC SUBSTANCES CONTROL ACT
 (TOSCA) INVENTORY LIST

We have reviewed the memorandum of September 8, 1977, from Manager Manufacturing - Safety and Health Office with regard to that portion of the Resins Business Center materials and products list that involves the Deer Park Manufacturing Complex, and suggest the changes as noted in the attachment.

Please contact Messrs. D. C. Merdian or H. H. Jenkins if you have questions regarding these changes.



E. L. Acosta

HHJ/sp

Attachment

cc - L. S. Alpert
 K. R. Arnold
 M. S. Johnsen
 D. C. Merdian

Resins Business Center
E. R. Bell

DPMC-09046

LAM 002933

ATTACHMENT

LIST A

Add "Tetramethylammonium Chloride" as noted in E. R. Bell's memo of February 2, 1977, to Mr. R. F. Glassner, HS&E.

LIST B

- Item 2 - Add "Tween 20".
- Item 4 - Add "Modaflow".
- Item 6 - Add "and solutions containing xylene".
- Item 7 - Should read "Solid Epichlorohydrin/Tetraphenolethane Epoxy Resin or solution in Methyl Ethyl Ketone".
- Item 9 - Omit "WPE* 6000".
- Item 22 - Should read "contains small quantities of 2,2-Bis (o,p'-hydroxyphenyl)"
- Item 25 - Amine nitrogen content range should be "3.5-5.5%w".

We do not see any items in Curing Agents list that would include Curing Agents S-4, S-5, S-6, which have been made within the stated time period and which are in inventory at DPMC; thus, add:

- Item 45 - "Solutions of Ethylenediamine, Diethylene Triamine, or Versamid 140. Mixture and/or solution containing one or more: Dutrex 298, Dinonyl Phenol, Hexylene Glycol, Shell Oil 60 Spray Base."

Also add as:

- Item 46 - "Meta-phenylenediamine"
- Item 47 - "Adduct of Aniline and Meta-aminophenol with Liquid Bisphenol-A/Epichlorohydrin Epoxy Resin (WPE 185-192)".

DPMC
HHJ
10/31/77

DPMC-09047

LAM 002934

~~SECRET~~ VJM November 1, 1977

R. V. Mattern

Additions to TOSCA Inventory List

R. L. Brunner's memorandum of September 8, 1977, requested that DPMC review the inventory of our products, raw and process materials, and intermediate streams as required by the Toxic Substances Control Act (TOSCA).

Since there were a number of unconsolidated inventory lists for the intermediates area appended to Brunner's memo, we selected two which appeared the most complete for review. We have attached those two lists which we used as our starting point plus lists by process area of additional chemicals which should also be included in the TOSCA inventory.

This review was time-consuming, inefficient and most likely incomplete. There is obviously a need for a company-wide procedure for routinely capturing such information and inputting it into a central, computerized data bank, so that Shell has an evergreen, quickly-accessible inventory of the chemicals it uses and makes.

Attachments



- K.R. Arnold
L.W. Horstman

C. A. BAYENS

B:s1b

DPMC-0904R

LAM 002935

DEER PARK MANUFACTURING COMPLEX
ADDITIONS TO TOSCA INVENTORY LIST
ALLYL CHLORIDE/D-D*/CRUDE EPICHLOROHYDRIN

Raw and Process Material Additions

Alumina	In Propylene and AC LE Driers
Sulfuric Acid	For CWT Treatment
Betz J-12	For CWT Treatment
Betz 39A	For CWT Treatment
Natural Gas	As Furnace Fuel
Ammonia	For HCl/Cl ₂ Leak Detection
Acetic Acid	In AC Titrator in Crude ECH Unit
Acetonitrile	In GPH Quantities in Crude AC Prefractionator
Octane	For Outer Seal Flush on C ₃ /HCl Pumps
Methanol	As De-icing Agent in Crude AC Unit
n-Propyl Alcohol	As De-icing Agent in Crude AC Unit
Acetone	To clean D-D Columns
Ethylene Glycol	As Antifreeze for Instrument Seal Legs
Carbon Monoxide	In Sniff Gas to Crude ECH
Carbon Dioxide	In Sniff Gas to Crude ECH
Hydrogen	In Sniff Gas to Crude ECH

Intermediate and Impurity Additions

1 Chloroprene (Listed)	Has both cis and trans isomers
<u>cis</u> 1,2,3 Trichloropropene	Present with 1,2,3 Trichloropropane
<u>trans</u> 1,2,3 Trichloropropene	Present with 1,2,3 Trichloropropane
1,1 Dichloropropane	Present at Tenths of % levels in D-D
2,2 Dichloropropane	Present at Tenths of % levels in D-D
1,2 Dichloropropene	Present at Tenths of % levels in D-D
1,1 Dichloroethane	Present at Tenths of % levels in D-D
1,2 Dichloroethane	Present at Tenths of % levels in D-D
Acrolein	Present in Small Amounts in Crude ECH
Allyl Alcohol	Present in Small Amounts in Crude ECH
Sodium Hypochlorite	A By-Product in Sniff Gas Absorber
Benzene	Present at 0.2% By Weight Level in D-D Flasher Bottom
Iron/Nickel Chlorides	Corrosion Products

Product Additions

None

*Registered Trademark U.S. Patent Office

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CAB:slb
11/1/77

DPMC-09049
LAM 002936

DEER PARK MANUFACTURING COMPLEX
ADDITIONS TO TOSCA INVENTORY LIST
FINISHED EPICHLOROHYDRIN/TRIOL (SC-2590)

Raw and Process Material Additions

"Ethyl" Antioxidant - A mixture of: Anti-Fouling Agent in LE Column

Ortho-Tert-Butylphenol
2,6 Di-Tert Butylphenol
2,4,6 Di-Tert Butylphenol
and Other Phenols

Intermediates and Impurity Additions

2-Chloropropene }
Ethyl Chloride }
2-Chloropropane }

Constitutes ca. 17% of ECH LE

n-Propyl Chloride
Acrolein
1,1 Dichloromethane
Isopropyl Alcohol
Dichloroethane
Benzene
1,2 Dichloropropene

Constitutes ca. 15% of ECH LE
Present at ca. 4% in ECH LE
Present at ca. 4% in ECH LE
Less than 1% in ECH LE
Less than 1% in ECH LE
Less than 1% in ECH LE
About 1% in ECH LE

Acetonitrile }
3,3 Dichloropropene }
Chloroform }

Constitutes ca. 4% of ECH LE

1,2 Dichloroethane
2,3 Butanedione
Hydroxyacetone
Chloroacetone
1,2:5,6 Diepoxyhexane

Less than 1% in ECH LE
PPM Traces in Finished ECH Product
Intermediate of 2,3 Butanedione in G-300
Intermediate of 2,3 Butanedione in G-300
Present at 100 PPM levels in ECH HE

Products

Replace Glycerine with
TRIOL (SC-2590)

DPMC
CAB:slb
11/1/77

DPMC-09050

LAM 002937

DEER PARK MANUFACTURING COMPLEX
ADDITIONS TO TOSCA INVENTORY LIST
CHLORO-ALKALI

Raw and Process Material Additions

Calcium Sulfate	In Raw Brine
Ammonia	In Raw Brine
Bromine	In Raw Brine
Sodium Carbonate	Used to Precipitate Calcium from Raw Brine
Betz 2820	Flocculent (Polyacrylamide co-Polymer)
Hydrochloric Acid	Used to Acidify Raw Brine
Asbestos	Used for Cathode Diaphragm
1,1,1 Trichloroethane	Degreaser for Cell Parts
Methylene Chloride	Used to Clean Chlorine Process Equipment
Sulfuric Acid	For Drying Chlorine

Intermediate and Impurity Additions

Sodium Sulfate	Co-Product of Calcium Carbonate Precipitation
Hypochloric Acid	From Chlorine Absorption in Water
Hypochlorous Acid	From Chlorine Absorption in Water
Sodium Hypochlorite	From Chlorine Absorption in Caustic
Sodium Chlorate	From Chlorine Absorption in Caustic
Nitrogen Trichloride	Results from Chlorination of Ammonia in Brine
Carbon Monoxide	Trace Concentrations in Chlorine
SO ₂ Cl ₂	By-Product from Chlorine Drying Process
HSO ₃ Cl	By-Product from Chlorine Drying Process

Product Additions

None

DPMC
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11/1/77

DPMC-09051

LAM 002938

DEER PARK MANUFACTURING COMPLEX
ADDITIONS TO TOSCA INVENTORY LIST
VINYL CHLORIDE MONOMER/ORGANIC CHLORIDE INCINERATOR

Raw and Process Material Additions

Silica Gel	In Instrument Air Driers
Iron Chloride on Alumina	Catalyst in Fifth Stage Reactor
Molecular Sieves	In VCM LE Driers
Sodium Sulfite	In Oxy Boiler Water
Sodium Phosphate	In Oxy Boiler Water
Propane	In Propylene Supply
Isopropyl Chloride	In HCl From G
#2 Fuel Oil	
Natural Gas	
Fuel Gas	For Furnaces
Calcium Carbonate	To Neutralize Incinerator Acid
Hydrogen	To Reduce Chlorine to HCl Downstream of Incinerator

Intermediate & Impurity Additions

67 Acidic Acid	In Finished VCM
Dichloromethane	In Finished VCM
Ethyl Chloride	In VCM LE
Sodium Carbonate	
Calcium Carbonate	
Calcium Hydroxide	
Iron Hydroxide	
Nickel Hydroxide	
Nickel Chloride	
Nickel Carbonate	In VCM LE Column Reflux Accumulator
Sodium Formate	
Calcium Formate	
Copper Chloride	
Copper Hydroxide	
Copper Carbonate	
Iron Carbonate	
Ethanol	
Ethylene Oxide	In VCM LE
Alpha Glycols	
Ethylene Glycols	
Bis-2 Chloroethyl Ether	
Pentachloroethanes	In Quench Column Purge.
Hypochlorite	In Incinerator Acid Stream
Sodium Hypochloride	In Incinerator Acid Stream
Calcium Chloride	From Neutralization of Incinerator Acid
Hydrochloric Acid	Major Intermediate From Incineration

VINYL CHLORIDE MONOMER

Vinyl Chloride
1, 2 Dichloroethane (EDC)
Hydrogen Chloride
Chloromethane
Chloroform
Carbon tetrachloride
Acetylene
Methyl Acetylene
Mono vinyl acetylene
1, 1 Dichloroethene
1, 2 Dichloroethene
1, 1 Dichloroethane
1, 1, 2 Trichloroethane
Trichloroethene
Tetrachloroethene
1, 1, 1, 2 Tetrachloroethane
1, 1, 2, 2 Tetrachloroethane
Pentachloroethane
2 Chloropropene
1 Chloropropene
1, 2 Dichloropropene
1, 3 Dichloropropene
3 Chloro 1, 3 butadiene (chloroprene)
Butene-2
Butadiene
1, 2 Dichlorobutane
1, 3 Dichlorobutane
1, 4 Dichlorobutane
1, 1, 2 Trichlorobutane
1, 2, 4 Trichlorobutane
1, 4 Dichloro-2 butene
Vinyl bromide
Acetaldehyde
Carbon monoxide
Carbon dioxide
Trichloroethanal (Chloral)
Chlorine
Ethane
Ethylene
Methane
Sodium hydroxide
Sodium chloride
Ferric chloride
Ammonia
Cuprous chloride on Alumina
Alumina
Propylene

ALLYL CHLORIDE - CRUDE EPICHLOROHYDRIN

Allyl Chloride
Epichlorohydrin
Ethyl Chloride
1 Chloro propane
2 Chloro propane
1 Chloropropene
2 Chloropropene
Cis 1, 3 Dichloropropene
Trans 1, 3 Dichloropropene
2, 3 Dichloropropene
3, 3 Dichloropropene
1, 2 Dichloropropane
1, 2, 3 Trichloropropane
1, 5 Hexadiene
1, 2 Dichlorohydrin
1, 3 Dichlorohydrin
Monochlorohydrin
Glycidol
2 Chloro allyl alcohol
Hydrogen chloride
Hydrochloric acid
Methyl isobutyl ketone
Chlorine
Propylene
Propane
Ethylene
Ethane
Butane
Butylene
Mercaptans
Carbonyl sulfide
Sodium mercaptides
Sodium hydroxide
Sodium chloride
Calcium hydroxide
Calcium carbonate
Calcium chloride
Sodium carbonate
Carbon dioxide
Ammonib-28
(Mixed long chain fatty amine)

HOUSTON PLANTSALLYL ALCOHOL

Allyl chloride
 Allyl alcohol
 2 chloro propane
 1 chloro propane
 1 chloro propene
 2 chloro propene
 Isopropyl alcohol
 Normal propyl alcohol
 Diallyl ether
 Sodium hydroxide
 Sodium chloride

ETHYL CHLORIDE

Ethylene
 Ethane
 Acetylene
 Ethyl chloride
 Methane
 1, 1 Dichloroethane
 Vinyl chloride
 2 chloropropane
 Secondary butyl chloride
 Hydrogen chloride
 Ferric chloride
 Carbon dioxide
 Hydrogen

CHLORO-ALKALI UNIT

Sodium chloride
 Sodium hydroxide
 Chlorine
 Calcium chloride
 Magnesium chloride
 Calcium hydroxide
 Calcium carbonate
 Magnesium carbonate
 Carbon dioxide
 Hydrogen
 Oxygen
 Nitrogen

CRUDE EPICHLOROHYDRIN-EPICHLOROHYDRIN-GLYCERINE

Epichlorohydrin
 Glycerine
 Allyl chloride
 1, 2 Dichloropropane
 1, 3 Dichloropropane
 3, 3 Dichloropropane
 2, 3 Dichloropropane
 1, 2, 3 Trichloropropane
 2 Chloroallyl alcohol
 Mono chlorohydrin
 1, 2 Dichlorohydrin
 1, 3 Dichlorohydrin
 Glycidol
 Methyl Isobutyl Ketone
 Tetra chloropropyl ether
 Diglycerol
 Polyglycerols
 2, 5 bis (hydroxy methyl) p dioxane
 2, 6 bis (hydroxy methyl) p dioxane
 Hydroacrylaldehyde glycerol acetal
 Glycerol -n propyl ether
 Glycerol allyl ether
 Sodium carbonate
 Sodium chloride
 Carbon dioxide
 Aqueous hydrochloric acid
 Calcium carbonate
 Calcium hydroxide
 Calcium oxide
 Calcium chloride
 Activated carbon
 Toluene

ATTACHMENT

CHEMICALS EXISTING IN CHEMICAL INTERMEDIATED PROCESSES

HYDROCARBONS

Methane	Minor component-C ₃ feed to AC
Ethane	Minor component HC feeds to most processes
Ethylene	Major feedstock item
Acetylene	Minor component in feed to EC (being reduced
Propane	Component to 30% in propylene feeds
Propylene	Major feedstock item
Methyl acetylene	PPM traces in VCM product
2-Butene	PPM traces in VCM system
Butadiene	PPM traces in VCM system
Mono vinyl acetylene	PPM traces in VCM system
1.5 Hexadiene	8.3% in fin. AC, to 1% in ACLE and AA CBM
Monasol® 125	(PCD Product) Extractive distillation Solven AN unit

ORGANIC CHLORINE COMPOUNDS

Chloromethane	To 70 ppm in VCM product
Chloroform	VCM LE streams contain to 25%
Carbon tetrachloride	VCM LE streams contain to 30%
Ethyl chloride	Major pure product and 30% of EDC LE
Vinyl Chloride Monomer	Major pure product
1.1 Dichloroethane	VCM light end steams contain to 1%
1.2 Dichloroethane	Major Intermediate to VCM
1.1 Dichloroethene	Various VCM LE streams contain to 1%
1.2 Dichloroethene	Various VCM LE streams contain to 15%
1.1.2 Trichloroethane	Various VCM HE streams contain to 90%
Trichloroethene	Numerous VCM streams contain to 2%
1.1.1.2 Tetrachloroethane)	Component of EDC HE to 6%
1.1.2.2 Tetrachloroethane)	Trace in VCM-EDC Heavy ends
Pentachloroethane	To 1% in VCM LE and AC streams
1 Chloropropane	90% of IPC column botts, AC plants
2 Chloropropane	To 0.5% in finished AC, to 4% in AC LE
1 Chloropropene	To 60% in AC LE, 0.2% in finished AC,
2 Chloropropene	PPM in VCM system
1 Chloro 2 Propene (AC)	Major pure product
1.2 Dichloropropane	19-28% of D-D, fraction of % in VCM HE and Crude ECH
1.3 Dichloropropane	Fraction of a % in VCM HE and Crude ECH stream
cis, 1.3 Dichloropropene	23-29% of D-D
trans 1.3 Dichloropropene	23-29% of D-D
2.3 Dichloropropene	5-9% of D-D, 10% of D-D botts
3.3 Dichloropropene	3-4% of D-D

10/14/74 memo

ORGANIC CHLORINE COMPOUNDS (Cont'd.)

1.2.3 Trichloropropane (TCP)	To 75% in Major ECH by-product streams
2 Chlorobutane	PPM in reaction product - EC process
1.2 Dichlorobutane	Several tenths % in VCM HE streams
1.3 Dichlorobutane	To 5% in VCM heavy ends streams
1.4 Dichlorobutane	To 1.5% in VCM heavy ends streams
1.1.2 Trichlorobutane	Traces in VCM heavy ends streams
1.2.4 Trichlorobutane	Traces in VCM heavy ends streams
1.4 Dichloro 2 Butene	Traces in VCM heavy ends streams
3 Chloro 1.3 butadiene (Chloroprene)	0.1% in VCM col bottoms
Trichloroethanal (Chloral)	0.1% in EDC side streams
Epichlorohydrin	Major pure product
2 Chloro allyl alcohol	Minor impurity in ECH and AA systems
Monochlorohydrin	Major intermediate - Houston glycerine process
1.2 Dichlorohydrin	Major intermediate - Houston glycerine process
1.3 Dichlorohydrin	Major intermediate - Houston glycerine process
Tetrachloropropylether	To several % in crude Trichloropropane

ORGANIC BROMINE COMPOUNDS

Vinyl Bromide	Low PPM in EDC reactor product. Eliminated
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ALCOHOLS

Allyl Alcohol	Major pure product, and a major intermediate
Isopropyl Alcohol	85% of major feedstock stream to HP
Methyl Alcohol	Trace quantities in AN-AA side streams
Normal propyl alcohol	To 1% in major AA plant streams
Secondary butyl alcohol	Major intermediate product

KETONES AND ALDEHYDES

Acetaldehyde	Major by-product. Shipped in tank cars
Acetone	Major by-product of HP manufacture
Acrolein	Major product - 94% pure min.
Dihydroxyacetone	Trace quantities in Norco crude glycerine
Formaldehyde	Minor component of crude HP
Glyceraldehyde	Trace quantities in Norco crude glycerine
Methyl ethyl ketone	Major by-product of AA process
Methyl isobutyl ketone	Minor component of recycle ECH - Houston
Methyl Vinyl ketone	About 0.3% in crude acrolein
Propionaldehyde	To 3.5% in finished acrolein, to 7% of AA Co

DPMC-09056

LAM 002943

POLYOLS

Glycerine
Glycidol
Diglylerol
Polyglycerols

Major pure product
Major intermediate in glycerine processes
To 15% in glycerine Foots Still bottoms
To 15% in glycerine Foots Still bottoms.

ACIDS

Acetic acid
Dipertungstic acid
Formic acid
Hydrochloric acid
Hydrogen chloride
Nitric acid
Phosphoric acid
Propionic acid
Sulfuric acid
Tungstic acid

Minor impurity - Crude HP
Intermediate in Norco Glycerine Process
Minor impurity - Crude HP
Major by-product stream on solution of HCl
Major chemical in EC, AC, VCM plants
Inhibitor for hydrogen peroxide
Inhibitor ofr hydrogen peroxide
Minor impurity - Crude HP
Inhibitor for hydrogen peroxide
Catalyst for Norco glycerine process

GASSES

Oxygen
Nitrogen
Carbon dioxide

Hydrogen

Major feed gas to acrolein
Residual from oxygen production
Major by-product - glycerine, ECH plants,
CaCl₂ mfg.
To 20% chlor-alkali sniff gas

OTHER CATALYSTS AND RESINS

Copper on Macroport SA 5218
Cuprous chloride on alumina
Ferric chloride
Amberlite IRA 904 Resin

Catalyst for acrolein reaciton
Catalyst for ethylene oxychlorination process
Catalyst for ethylene dichloride manufacture
Rohm & Haas resin for Tungsten recovery -
Norco glycerine

OXIDES

Hydrogen peroxide
Propylene oxide
Ethylene oxide

Major product to 90% concentration
0.3% in crude acrolein; to 15% in AA LE col'mt
To 0.4 in finished acetaldehyde

REFINERY

hr vs TO
2,4177 Memo

CHEMICALS

Nalco 6RB-837

Nalco 169

Nalco 4RE-238

Ethyl Package 9

Ethyl 733

Methyl ethyl ketone

Diethanolamine

Sulfolane

Zimmite - ZC332

R16H Platinum Catalyst

Arguad 2-C

M. D. A.

Methanation Catalyst KAT-11-3

SMR Catalyst Katalco 22635

Hi Temp Shift Cat C-12-1-05

Lo Temp Shift Cat KAT-52-1 & 1G

Shell Hydrotreating Catalyst 514

Shell Hydrotreating Catalyst 544

WASTE PRODUCTS

Desalter brine

Spent Sulfuric Acid

Spent Sulfide Caustic

RAW MATERIALS

Isopentane

BLENDING COMPONENTS

BEU Raffinates

Mixed Xylenes

C₉ Aromatics

PRODUCTS

Blended Liquid Refinery Fuel

SR Mixed Butanes

BYPRODUCTS Or Disposal Streams

Pyrolysis Pitch

Nalco 5170

ROKON

WRIGHT

Toluene

Dowcorning 200 fluid

Kontol 430-W

Kontol 424

Diisopropanolamine

Sodium Carbonate

Nickel Carbonyl

Sulfur

Shell Hydrotreating Catalyst 214

Shell Hydrotreating Catalyst 244

Shell Hydrotreating Catalyst 324

Shell Hydrotreating Catalyst 344

Shell Hydrotreating Catalyst 524

INTERMEDIATES

SR Kerosene	100 Dewaxed Raffinate
Mol Sieve feed kerosene	250 TQ Dewaxed Raffinate
SR Flasher liquid tops	250 MQ Dewaxed Raffinate
Debutanized naphtha C ₅ /200	Heavy Dewaxed Raffinate
Secondary naphtha 200/425	Deasphalted Oil Dewaxed Raffinate
HVI Gas Oil	Crude 115/120 Wax
HVI 100 Distillate	Crude 130/137 Wax
HVI 250 Distillate	Crude 140/150 Wax
HVI Heavy Distillate	Crude 160/170 Wax
HVI Short Residue	Raw 124/126 Wax
LVI Gas Oil	Raw 140/142 Wax
LVI 65 Distillate	Raw 158/162 Wax
LVI 200 Distillate	Raw 170/180 Wax
LVI 750 Distillate	Raw 145/150 Wax
LVI Slop	Raw HMP Wax
LVI Flux	100 Soft Wax
Deasphalted Oil	250 Soft Wax
100 Distillate Raffinate	Heavy Soft Wax
250 TQ Distillate Raffinate	Deasphalted oil Soft wax
250 MQ Distillate Raffinate	CR-3 Reformate
Heavy Distillate Raffinate	Hydrotreated Cat Feed
Deasphalted Oil Raffinate	Cat Cracked P.D.
Naphtha	CC Heavy Naphtha
100 Distillate Extract	CC LGO
250 TQ Distillate Extract	CC HGO
250 MQ Distillate Extract	CC Tray 12
Heavy Distillate Extract	CC Slurry
Deasphalted Oil Extract	

A list of proprietary chemicals presently used, or used occasionally in water treating in the Shell Manufacturing Complex:

Betz 39A	Wrico 55	Calgon TG-10
Betz 35	Wrico D-9336	Calgon BA-11
Betz 419	Wrico E-1927	Calgon C-1 Antifoam
Betz J-12	Wrico BGA	Calgon K-91
Betz 2890	Zimmite ZC-322	Calgon NL-80
Betz 2820	Zimmite Chemtrol 12	Calgon Catflock T
Betz C-20	Zimmite AF-198	Calgon CL-50
Foam-Trol 260C	Zimmite ZM-136	Calgon CL-707A
Adjunct 2V	Zimmite Chemtrol 5B	
Liqui-Treat AL	Zimmite Chemtrol 850	
Corrogen		
Betz 46S		United Chemical
Betz 50		Boiler-Hib 1000
Betz 408		
Betz 633	<u>Water Treating Resins</u>	
Betz 2885		
Betz 2810		
Betz NA-7		

A list of bulk commodities used (not mentioned elsewhere):

Water
Ferrous Sulfate Solution
Sodium Sulfite
Sodium Hexametaphosphate
Sodium Silicate
Nitrogen
Air
Fuel Gases
Fuel Oils

November 14, 1977

TO: L. J. Lambin - Process Engineering-East
FROM: T. J. Nedderman - Phenol/Acetone Plant Start-up
SUBJECT: List of Raw Materials, Products, and Chemicals and
Catalysts Used in the Phenol/Acetone Plant

The following list was compiled per your request.
If you need additional information, please let me know.

Raw Materials

Propylene
Propane
Benzene
Hydrogen

Finished Product

Phenol
Acetone

Intermediates (Suitable for Sale)

Cumene

For catalysts and chemicals used in the process,
see the attached list.

T. J. Nedderman

cc: VAM

DPMC-09061

LAM 002948

CATALYST, CHEMICALS & FEED STOCKS

PAGE 1 OF 2

ITEM	Type	Startup Quantity Cu. Ft.	Lbs.	Date Required	Suggested Supplier	Received By - In	Delivered to Unit	Spare Warehouse Inventory	Design Consumption M lb./mo.
A. CATALYST									
1. Cumene Reactors	UOP SPA-1	10620	573600	4/23/77	Universal Oil Products	Drums	V-8100 V-8101	-	573.6/9 mo.
2. AMS Hydro Reactor	Engelhard PGC	217	13000	5/30/77	Engelhard	Drums	V-8330	-	13/2 yr.
3. Carbon Adsorbers	UC-Columbia Activated Carbon	1160	39450	5/23/77	Union Carbide	Drums	V-8203 V-8206	39450 lbs.	39.5/6 mo.
B. CATALYST SUPPORTS									
1. Cumene Reactors	1/2" min to 3/4" double-screened crushed firebrick ASTM G27 Ceramic balls	1200		4/24/77	A.P. Green Firebrick NORFOLK	Bags	V-8100 V-8101	-	1200 cu ft/ 9 mo.
2. AMS Hydro Reactor	1/2" alumina balls 3/4" alumina balls 3/8" alumina balls	12.6 12.6 12.6	1700 1700 1700	5/30/77 5/30/77 5/30/77	Aluminum Co. of America	Drums Drums Drums	V-8330 V-8330 V-8330	- - -	- - -
C. COLUMN PACKING									
1. Dephenolation Ext	3/4" Ceramic Reschig-Rings INTALOX 5A BOLLER	1145		6/6/77	Norton	Fibre Containers	V-8230	-	-
D. CHEMICALS - FEEDS									
1. Sulfuric Acid	93%w 93%w	197	16910 78000	4/18/77 6/20/77	Stauffer Stauffer	Truck Truck	V-8181 Tank S-303	- -	60 196
2. Inhibitor*	Cooling Water Tower			4/18/77		Truck	CWT Tank	-	?
3. Corrosion Inhibitor	Unicor - LHS	3 - 55 gal drums		7/23/77	Universal Oil Products	Drum	Drum (Cumene)	6 - 55 gal drums	3 drum/mo.
4. Ammonia	Bulk Cylinders 150 lb.		12,000 6375 260	7/23/77 9/19/77		Truck Cylinder	V-8241 Cylinders (AMS)	-	260 lb/6 mo.
5. Limestone	1"-6" Crushed	104		7/23/77		Truck	Acid Sump	-	104 cu ft/ 6 mo.
6. Oxalic Acid	100%w		400	9/19/77	Allied Chemical	50 lb bags	Bags (V-8328)	3000 lb	1.9

ITEM	Type	Startup Quantity		Date Required	Suggested Supplier	Received By - In	Delivered to Unit	Spare Warehouse Inventory	Design Consumption M lb/mo.
		Cu. Ft.	Lbs.						
7. Chlorine	1-ton Cylinders		4000	4/18/77		Cylinder	Cylinder (CWT)	-	2 cyl/mo.
8. Caustic Soda	20° Be 20° Be		202000	5/2/77 7/25/77	Shell Oil Shell Oil	Pipeline Pipeline	Hydrogen Plt V-8324 to EX-67 (Startup)	-	296 1283
9. Sodium Carbonate	8%w		128000	5/23/77	Shell Oil	Pipeline	Tank S-308	-	720
10. Cumene			220000	6/27/77	Shell Oil	Truck	Tank D-394	-	-
11. Benzene			11170M	7/25/77	Shell Oil	Pipeline	Tank D-393	-	41960
12. Propane			22125	7/25/77	Shell Oil	Pipeline	V-8107	-	-
13. Hydrogen	95% vol		-	9/19/77	Shell Oil	Pipeline	V-8330	-	47
14. Acetone	100% (Dry)		100000	7/25/77	Shell Chem	Pipeline	Tank D-390	-	-
15. Propylene	93% Vol		6220M	7/25/77	Shell Chem	Pipeline	V-8100 V-8101	-	25820
16. Toluene			-		Shell Oil		D-313	-	-

*Cooling Water Tower

<u>Startup Chemicals</u>	
Polypophosphate	2558 lb
Dispersant	1279 lb
Surfactant	639 lb
Inhibitor	890 lb
Inhibitor	1790 lb
<u>Sustained Operation</u>	
Inhibitor	560 gal
Inhibitor	560 gal

VJM

November 8, 1977

Mr. R. V. Mattern:

I have reviewed the Toxic Substances Control Act (TOSCA) inventory list. If there are any chemicals we are using or making that are not included in here, I can't find them.

As best I can tell this is complete.

CES:pab

C. E. Speight
C. E. SPEIGHT

DPMC-09064

LAM 002951