Monsanto

FROM NAME & LOCATION: R. J. Bodre - Texas City, TX

File Plant IH

DATE: October 14, 1976

SUBJECT: Toxicity Survey

REFERENCE:

TO : S. L. Hunter

cc P. E. Brubaker
G. E. Davenport - CB
J. C. Edwards - CB
C. Elmer - St. L
J. E. Fox
J. A. Glass
W. G. Juhl
H. M. Keating - St. L
W. H. Lane
S. A. Roberts - St. L
Central Files

Enclosed are three copies of "Toxicity Survey of Raw Materials, Intermediates and Products Associated with the Texas City and Chocolate Bayou Plants." This is the completed form of the Survey that you started some time ago and instructed us to complete at the time of our meeting in Texas City on September 28, 1976. Copies are also being forwarded to the indicated people who are concerned with the results of the Survey.

We tried to adhere to the guidelines that you gave at the meeting. We found it necessary to define the premises list on page 1 of the Survey in order to keep the bulk of the information to a practical size as well as comply with the target date of "middle of October" for completion of the assignment.

Bob
R. J. Bodre

Bob
R. L. Maute

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Encl. (3)

PLAINTIFF'S EXHIBIT
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MON-257

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Monsanto

Monsanto Polymers & Petrochemicals Co.
Process Technology Department

File

TOXICITY SURVEY

OF

RAW MATERIALS, INTERMEDIATES, AND PRODUCTS

ASSOCIATED WITH TEXAS CITY AND CHOCOLATE BAYOU PLANTS

COMPANY CONFIDENTIAL

~~0013578 BSB~~
~~0000558 QUI~~

~~MCU 0332684~~

Date: October 11, 1976

Compiled By: R. J. Bodre
S. L. Hunter
R. L. Maute

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PREMISES

1. Includes raw materials, intermediates, wastes, physical agents and products that are or can be isolated as a specific entity or separate stream for sale or reprocessing in chemical plants now in existence (October, 1976). Components in concentrations less than 0.1% are excluded.
2. Excludes Air (Nitrogen, Oxygen, Argon, Ozone), Steam and Water (but includes Waste Water).
3. Excludes chemicals, reagents and materials currently in use in Unit Labs, Control Labs or PT Labs.
4. Excludes chemicals, materials and agents used for Housekeeping and Office or Building Maintenance.
5. Items included in "Screen" Category may or may not have existing documentation of toxic effects.
6. Excludes chemicals, materials and agents used by Crafts and Trades (see Ref. 7 for those employed at the Texas City Plant).

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REFERENCES

1. "Industrial Hygiene Survey of Chocolate Bayou Plant" compiled January 1975. Report by Steven A. Roberts, Monsanto Medical Department March 18, 1975.
2. "Preliminary Industrial Hygiene Survey of The Texas City Plant" conducted November 1975. Report by S. A. Roberts.
3. Acetone Cyanohydrin (ACY) Process Information - Personal Communication: H. A. Conrad to R. J. Bodre, October 5, 1976.
4. Diphenyl Oxide (DPO) Process Information - Personal Communication: M. W. Glazner to R. J. Bodre, October 8, 1976.
5. "Registry of Toxic Effects of Chemical Substances" 1975 Edition prepared for NIOSH by Tracor Jitco, Inc.
6. "Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes for 1976." Publication of ACGIH.
7. "Compilation of Present and Past Chemicals Used in Various Work Areas at Texas City Plant" by J. E. Fox and D. N. Campbell, October 10, 1976.
8. "Industrial Hygiene Program at Monsanto Chocolate Bayou" by J. C. Edwards, June 4, 1976.

MAP 000538

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LIST OF COMMON ABBREVIATIONS

AA	Acetic Acid
ACY	Acetone Cyanohydrin
ACGIH	American Conference of Governmental Industrial Hygienists
Bz	Benzene
DMEH	Department of Medicine and Environmental Health, Monsanto Company, St. Louis, Mo.
DNP	Dinitrophenol
DPO	Diphenyl Oxide
EB	Ethylbenzene
Envir. Control	Environmental Control
HOA	Heavy Aromatic Oils
HOE	Heavy Oxo Ester
HMTA	Hexamethylene Tetramine
HCN	Hydrogen Cyanide
LA	Lactic Acid
LN	Lactonitrile
LAN	Light Aromatic Napthas
MeOH	Methanol
NIOSH	National Institute for Occupational Safety and Health
NTAN	Nitrilotriacetonitrile
NTA	Nitrilotriacetic Acid and Trisodium Salt
OSHA	Occupational Safety and Health Act of 1970
PE	Polyethylene

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LIST OF ACTION CATEGORIES

A. Do paper screen using Refs. 5 and 6 as source of documentation.

B. Rely on Industry Study.

C. Obtain proprietory information from respective manufacturers.

D. No further action - material is safe or toxic effects well known which overwhelm chronic concern.

MAP 000540

PT	Process Technology
SAB	Soft Alkyl Benzenes
SNIFO	Special No. 1 Fuel Oil
SNIFON	Special No. 1 Fuel Oil (High in Naphthenes)
SM	Styrene Monomer
Syn Gas	Synthesis Gas
TBA	Tributylamine
TLV	Threshold Limit Value

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MAP 000541

TOXICITY STUDY

TABLE OF EQUIVALENTS

Arbitrary Equivalent	Material Equivalent To	Action Category
Alkyl Benzenes (Polyethyl Benzenes)	Benzene	B
Aromatics (C_6 - C_{10})	"	B
Distillate Stripper Bottoms	"	B
Dehydrogenated Mixture	"	B
Butene-2 and Mixed Isobutylene	Ethylene	B
Diisopropyl Benzene	Cumene	A
Rhodium Catalyst	Platinum Catalyst	D
Distillate Stripper Bottoms Xylenes	Toluene	B
Dehydrogenated Mixture	Styrene Monomer	B
Mixed C_4 and C_5	Butadiene	B

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MASTER LIST

Materials	Plant	Process or Dept.	Action Category
Acetic Acid	CB TC	NTA, AN AA	D
Acetaldehyde	TC	LN	A
Acetone	CB TC	Phenol ACY	A
Acetone Cyanohydrin	TC	ACY	D
Acetonitrile	CB	AN	A
Acetophenone	CB	Phenol	A
Acetylene	TC	Ethylene, P.E.	D
Acrolein	CB	AN, Environ. .	A
Acrylonitrile	CB TC	AN Materials Handling	B
Aldehydes (C7-C11)	TC	Oxo/Ester	A
Alkyl Benzenes (Polyethylbenzenes)	TC	EB, SM	B (Note 1)
Alpha-methyl Styrene	CB	Phenol	A
Alumina	CB	Phenol, SAB	D
Aluminum Chloride	TC	EB, Power	D
Aluminum Chloride-Organic Complex	TC	EB	A
Aluminum Granules	TC	EB	D
Ammonia	TC CB	PE, HCN, TBA, LN, La Phenol (Refrig.), AN, NTA	B
Ammonium Chloride	TC	LA	D
Ammonium Sulfate	CB	NTA	D

Note 1: Equivalent to Benzene

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Materials	Plant	Process or Dept.	Action Category
Armostat 310	TC	PE	D
Aromatics (C_6-C_{10})	CB	Hydrocarbons	B Note 1.
Asbestos	TC CB	Maintenance Maintenance	D Note 3
Benzene	CB TC	Hydrocarbons, Phenol EB, SM	B
Benzoic Acid	TC	Phthalic Anhyd.	D
Betz ACN #1 and #2	CB	AN	C
Betz Foamtrol LT	CB	AN	C
Biphenyl	CB	DPO	A
Bisphenol A	TC	Oxo-Ester	A
Butadiene	CB	Hydrocarbons	B
Butene-2 and Mixed Butenes	TC	PE	B Note 2.
C_4 + Oils (C. B. Quench Col.)	CB TC	Ethylene Ethylene	A
Calcium Chloride	TC	PE	D
Calgon-Coagulant Aid 233	CB	Utilities	C
Calgon-Corrosion Inhibitor (F98)	CB	Utilities	C
Calgon SL 500 Boiler Water Additive (mixture of NTA& & EDTA)	TC	Oxo/Ester	C
Calgon TG-10	CB	Utilities	C
Calgon-Trichelok K5	CB TC	Utilities MeOH/Syn Gas	C

Note 1: Equivalent to Benzene
Note 2: Equivalent to Ethylene
Note 3: (Tear out and/or repair)

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Materials	Plant	Process or Dept.	Category
Carbon, Activated & Black	TC	LA, Oxo/Ester, DPO	A
Carbon Dioxide	CB TC	Resins/Formalin PE, MeOH/Syn Gas	D
Carbon Monoxide	TC	MeOH/Syn Gas, AA Oxo/Ester	D
Carbowax (PE Glycol)	TC	PE	C
Chlorine	CB TC	Utilities Utilities, MeOH/Syn Gas	D
Chromate (Water Treatment)	TC	PE, Utilities	D
Cobalt Hydrocarbonyl	TC	Oxo/Ester	A
Cobalt Oxide Catalyst	TC	Oxo/Ester	A
Copper Chromite Catalyst (Barium Stabilized)	TC	Oxo/Ester	A
Copper Inhibitor	TC	PE	D
Copper Oxide/Zinc Oxide Catalyst (ICI 51-1)	TC	MeOH/Syn Gas	A
Copper Sulfate	CB	Utilities	D
Cumene	CB	Phenol	A
Cumene Hydroperoxide	CB	Phenol	A
Cyanide Complexes	CB	NTA	D
Dehydrogenated Mixture Mixture of EB, SM, Toluene, Bz, High Boiler	TC	SM	B Note 1
Dicyclopentadiene	CB	Hydrocarbons	A

Note 1: Equivalent to SM, Bz.

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Materials	Plant	Process or Dept.	Category
Diesel Oil	CB	Ethylene	D
Diisobutyl Aluminium Hydride	TC	PE	D
Diisopropyl Benzene	CB	Phenol	A Note 1
Dilauryl Thiodipropionate	TC	PE	C
Dimethyl Formamide	CB TC	Ethylene Ethylene	D
2, 4 Dinitro Phenol	TC	SM	A
Diphenyl Oxide	CB	DPO	A
Disodium Phosphate	CB	Utilities	D
Distillate Stripper Bottoms	CB	Ethylene	B Note 2
Dow-Corning Antifoam FB-10	TC	LA	C
Dowtherm A	TC	EB	C
Drying Agents (SiO_2, Mol Sieves)	CB	Ethylene	D
Duolite C-25 (Cation Resin)	TC	LA	C
Duolite A-4 (Anion Resin)	TC	LA	C
Ethane	TC CB	Ethylene Ethylene	D
Ethanol (SD-30)	CB	Resins/Formalin	D
Ethyl Chloride	TC	EB	D
Ethylbenzene	CB TC	Hydrocarbons EB, SM	A
Ethylene	TC CB	PE, EB, Ethylene Ethylene	B
Filter Aid (J-M Hydroflo) (Silica)	TC	SM, Oxo/Ester	C

Note 1: Equivalent to Cumene
Note 2: Equivalent to Bz, Tol.)

MAP 000546

Materials	Plant	Process or Dept.	Category
Flux Oil (Heavy ends used in SM or as boiler fuel)	TC	EB	A
Formalin (37 & 50%)	CB	Resins/Formalin	A
Formaldehyde	CB	NTA	A
Formaldehyde Co-polymers	CB	Resins/Formalin	A
Formic Acid	TC CB	TBA Resins/Formalin	A
Freon 22 and 11	TC	MeOH/Syn Gas	D
Fuel Gas (Methane)	CB	AN	D
Furfural	CB	Hydrocarbons	A
Gas Field Condensate	CB TC	Ethylene Ethylene	D
Glycerol Monosterate	TC	PE	C
Heavy Aromatics Oil (HOA)	CB	Oxo/Ester	A
Heavy Oxo Ester (HOE)	TC	Oxo/Ester	A
Hercules CR-403	TC	MeOH /Syn Gas	C
Hercules HF-502	TC	MeOH/Syn Gas	C
Hexamethylene Tetramine (HMTA)	CB	NTA	A
Hexane	TC	PE	D
Hydrazine	TC	MeOH/Syn Gas	D
Hydrogen	TC CB	P.E., MeOH/Syn Gas, AA Hydrocarbons, SAB	D
Hydrogen Chloride (Anhydrous or Soln.)	TC	PE, LA, EB	D

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Materials	Plant	Process or Dept.	Category
Hydrogen Cyanide	TC CB	ACY, TBA, HCN, LN NTA, AN	D
Hydrogen Fluoride	CB	SAB	D
Hydrogen Iodide	TC	AA	D
Hydrogen Peroxide	CB	NTA	A
Hydrogen Sulfide	CB	Hydrocarbons	D
Hydroquinone (as inhibitor)	CB	AN	A
Hyphosphorous Acid	TC	AA	A
Iodine	TC	AA	A
Ionol	TC	PE	C
Isobutanol	TC	PE	A
Isobutylene	TC	TBA	B Note 1
Isoprene	CB	Hydrocarbons	A
Kerosene	CB	Ethylene	D
Lactic Acid	TC	LA	D
Lactonitrile	TC	LA, LN	D
Light Aromatic Napthas (LAN)	CB	SAB	D
Lime (Calcium Hydroxide)	CB TC	SAB, Resins PE, AA	D
Maleic Anhydride	TC	Phthalic Anhy.	A
Melamine	CB	Resins/Formalin	A

Note 1: Equivalent to Ethylene

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Materials	Plant	Process or Dept.	Category
Melamine Resins	CB	Resins/Formalin	A
Mercury	TC CB	Instrument Dept. Instrument Dept.	D
Methyl Acetylene-Propadiene	CB	Ethylene	A
Methyl Ethyl Ether of Hydro-quinone	CB	AN	A
Methane	TC CB	Various Various	D
Methanol	TC CB	PE, MeOH, LA, AA Ethylene, Resins/Formalin	D
Methyl Iodine	TC	AA	A
Methoxypropionitrile	CB	Hydrocarbons	A
Methyl Lactate	TC	LA	A
Micro Cel T-38	CB	Oxo/Ester	C
Mixed C_4's & C_5's	CB	Hydrocarbons	B Note 1
Mixed Olefins (C_6-C_{10})	TC	Oxo/Ester	A
Monoammonium Phosphate	TC	HCN	D
Napthalene	CB TC	Hydrocarbons Materials Handling	A
Napthalene Bottoms (tar)	CB	Hydrocarbons	A
Napthalene Concentrate (arom. Oil No. 2)	CB	Ethylene, Hydrocarbons	A
Nickel Catalyst	TC	Oxo/Ester	A
Nickel on Alumina (Reformer Catalyst)	TC	MeOH/Syn Gas	A
Nitrilotriacetic Acid (NTA)	TC CB	Ethylbenzene NTA	A

Note 1: Equivalent to Butadiene

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Materials	Plant	Process or Dept.	Category
Nitriolotriacetonitrile (NTAN)	CB	NTA	A
o-Toluic Acid	TC	Phthalic Anhy.	A
o-Toluic Aldehyde	TC	Phthalic Anhy.	A
Off-Gas (CH_4, H_2) fuel	TC	Ethylene	D
Off-Gas - (85-90% H_2 burned as fuel)	TC	SM	D
Off-Gas (mainly N_2, CH_4 & C_2H_6 (burned as boiler feed)	TC	EB, Power	D
Olefins (C_8-C_{10} approx.)	CB	SAB	D
Olefins (C_4-C_6)	CB	Hydrocarbons	D
Oxalic Acid	CB TC	Resins/Formalin Oxo-Ester	D
Oxo Alcohol	TC	Oxo/Ester	A
Oxo Heavy End (mostly Decane)	TC CB	Oxo/Ester Ethylene	A
Oxo Light End Overhead (Heptane, Octane)	TC	Ethylene	A
Pentenes	CB	Hydrocarbons	A
Phenol	CB TC	Phenol, Resins/Formalin Materials Handling	B
Phenolic Liquid Resins	CB	Resins/Formalin	A
Phenolic Tar Wastes	CB	Phenol	A
Phenolic Varnish Resins	CB	Resins/Formalin	A
Phosphoric Acid	TC	LN	D
Phosphoric (P_2O_5) on Kieselguhl (Catalyst)	CB	Phenol	A
Phthalic Anhydride	TC	Oxo/Ester, PA	A

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Materials	Plant	Process or Dept.	Category
Phthalic Acid	TC	Phthalic Anhy.	A
Phthalic Esters	TC	Ester	A
Phthalide	TC	Phthalic Anhy.	A
Piperylenes (1, 3 Propadiene)	CB	Hydrocarbons	A
Plasticizers S-711 S-790 -DUP	TC	Oxo/Esters	A
Platinum Catalyst	CB	Phenol	D
Platinum Rhodium Catalyst	TC	HCN	D
Polyethylene-Pellets & Powder	TC	PE	A
Polyisobutylene	TC	TBA	A
Propane	CB	AN	D
Propionic Acid	TC	AA	D
Propylene	CB TC	Ethylene Ethylene	D
Pumice	TC	Oxo/Ester	A
Quench Oil (Heavy Aromatic Oil Aromatic Oil #1)	CB	Ethylene	A
Resin Oil (C_9)	CB	Hydrocarbons	A
Resin PR	CB	Ethylene	A
Rhodium	TC	AA	D Note 1
Sand (Sand Blasting) (Catalyst Bed)	TC/CB TC	Various SM	A
Santobrite	TC	MeOH/Syn Gas	C
Shell 105 Dehydrogenation Catalyst	TC	SM	A

Note 1: Equivalent to Pt

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MAP 000551

Materials	Plant	Process or Dept.	Category
SNIFO	CB	Hydrocarbons	A
SNIFON	CB	Phenol	A
Sodium Bisulfate	TC	ACY	D
Sodium Bisulfite	CB	Resins/Formalin	D
Sodium Carbonate	CB TC	NTA, Phenol Oxo/Ester	D
Sodium Formate	TC	TBA	A
Sodium Hexametaphosphate	CB	Utilities	D
Sodium Hydroxide (caustic)	TC CB	SM, EB, TBA, LN, PA, LA, MeOH/Syn Gas, ACY, PE AN, Phenol, NTA, Resins	D
Sodium Nitrite	CB TC	Utilities SM, Ethylene, MeOH/ Syn Gas	A
Sodium Sulfate	CB TC	Utilities, NTA, Phenol TBA	D
Sodium Sulfide	TC CB	Phthalic Anhyd. Resins/Formalin	D
Sodium Sulfite	TC	Utilities	D
Soft Alkyl Benzene SAB	CB	SAB	D
Soft Alkyl Benzene(SAB)(Crude)	CB	SAB	D
Sohio Catalyst 41	CB	AN	A
Stannous Oxalate	TC	Oxo/Ester	A
Stripped Oil Stream (of acid phase)	CB	SAB	D
Styrene Monomer	TC	SM	B
Styrene Tars	TC	SM	A

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Materials	Plant	Process or Dept.	Category
Sucrose	CB	Resin/Formalin	D
Sulfur Dioxide (inhibitor)	TC	HCN, PA	D
	CB	NTA	D
Sulfuric Acid	CB	AN, Resins/Formalin, NTA	D
	TC	Oxo/Ester, PA, HCN, TBA, LN, ACY	
t-Butyl Alcohol	TC	TBA	A
t-Butyl Amine	TC	TBA	D
t-Butyl Catechol	TC	SM	A
t-Butyl Formamide Sulfate	TC	TBA	A
Therminol VP-1	CB	DPO	A
Thorium Oxide Catalyst (and by-products)	CB	DPO	A
Titanium Tetrachloride	TC	PE	D
Toluene	CB	Hydrocarbons	B
	TC	SM	
Tributyl Phosphate	CB	Resins/Formalin	A
Triethylene Glycol	CB	Ethylene	A
Unicor (antifoam)	CB	Resins/Formalin	D
Vanadium	TC	Phthalic Anhyd.	A
Vinyl Acetate	TC	Distribution	A
Waste Water Containing traces DNP	TC	SM	A
Waste Water Containing traces of AN, Phenol & Oily Materials	CB	Environ. Control	A

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Materials	Plant	Process or Dept.	Category
Waste Water Containing traces of AN By-products	CB	AN	A
Welding Particulates and Vapors	TC CB	Various	A
Xylenes	CB TC	Hydrocarbons Phthalic Anhyd.	B Note 1
Ziegler Catalyst ($TiCl_4$ w/dialkyl aluminum hydride)	TC	PE	D
Zinc Oxide Catalyst	TC	MeOH/Syn Gas	D

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Note 1: Equivalent to Toluene

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TOXICITY SURVEY

ACTION CATEGORY A - DO PAPER SCREEN

Material	Information Source: NIOSH*	ACGIH**	No Info Available	Comment
Acetaldehyde	X	X		
Acetone	X	X		
Acetonitrile	X	X		
Acetophenone	X			
Acrolein	X	X		
Aldehydes (C_7-C_{11})	X Limited			
Alpha-methyl Styrene	X	X		
Aluminum Chloride - Organic Complex			X	
Biphenyl	X	X		
Bisphenol A			X	
C_4 - Oils (CB Quench)			X	
Carbon, Activated & Carbon Black	X	X		Info on C Black only
Cobalt Hydrocarbonyl			X	
Cobalt Oxide Catalyst	X			
Copper Chromite Catalyst (Barium Stabilized)			X	
Copper Oxide-Zinc Oxide Catalyst			X	

* Ref. 5
** Ref. 6

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TOXICITY SURVEY

ACTION CATEGORY A - DO PAPER SCREEN

Material	Information Source: NIOSH*	ACGIH**	No Info Available	Comment
Cumene	X	X		
Cumene Hydroperoxide	X			
Dicyclopentadiene	X	X		
Diisopropyl Benzene	X			
2, 4 Dinitrophenol and Na Salt	X			
Diphenyl Oxide (Phenyl Ether)	X	X		
Ethyl Benzene	X	X		
Flux Oil (Heavy Ends from SM)			X	
Formaldehyde (Formalin)	X	X		
Formaldehyde Co-polymers			X	
Formic Acid	X	X		
Furfural	X	X		
Heavy Aromatic Oils			X	
Heavy Aromatic Ester			X	
Hexamethylene Tetramine	X			
Hydrogen Peroxide	X	X		
Hydroquinone	X	X		
Hypophosphorus Acid			X	
Iodine	X	X		
Isobutanol	X			0013598 BSB
Isoprene	X			

TOXICITY SURVEY

ACTION CATEGORY A - DO PAPER SCREEN

Materials	Information Source: NIOSH*	ACGIH**	No Info Available	Comment
Maleic Anhydride	X	X		
Melamine			X	
Melamine Resins			X	
Methyl Acetylene-Propadiene		X		
Methyl Ethyl Ether of Hydroquinone			X	
Methyl Iodide	X	X		
Methoxypropionitrile			X	
Methyl Lactate		X		
Mixed Olefins (C_6-C_{10})			X	
Naphthalene	X	X		
Naphthalene Bottoms			X	
Naphthalene Concentrate			X	
Nickel Catalyst		X		As Ni Compounds
Nickel on Alumina		X		As Ni Compounds
Nitrilotriacetic Acid	X			
Nitrilotriacetonitrile			X	
o-Toluic Acid	X			
o-Toluic Aldehyde			X	
Oxo Alcohol	X			As separate alcohol
Oxo Heavy End			X	

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TOXICITY SURVEY

ACTION CATEGORY A - DO PAPER SCREEN

Materials	Information Source: NIOSH*	ACGIH**	No Info Available	Comment
Oxo Light End			X	
Pentenes			X	
Phenolic Liquid Resins			X	
Phenolic Tar Wastes			X	
Phenolic Varnish Resins			X	
Phosphoric Pentoxide (P_2O_5) on Kieselguhl			X	
Phthalic Acid	X			
Phthalic Anhydride	X	X		
Phthalate Esters			X	
Phthalide			X	
Piperylenes (1, 3 Propadiene)			X	
Polyethylene-Pellets & Powder	X			
Polyisobutylene			X	
Pumice			X	
Quench Oil (Heavy Aromatic Oil)			X	
Resin Oil (C_9)			X	
Resin PR			X	
Sand (SiO_2)	X	X		
Shell 105 Catalyst			X	
SNIFO			X	0013600 BSB

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TOXICITY SURVEY

ACTION CATEGORY A - DO PAPER SCREEN

Material	Information Source: NIOSH*	ACGIH**	No Info Available	Comment
SNIFON			X	
Sodium Formate	X			
Sodium Nitrite	X			
Sohio Catalyst 41			X	
Stannous Oxalate			X	As Tin Salts in AGGII
Styrene Tars			X	
t-Butyl Alcohol	X	X		
t-Butyl Catechol	X			
t-Butyl Formamide Sulfate			X	
Therminol VP-1 (Diphenyl Oxide and Biphenyl)	X	X		Info as Diphenyl Oxide or Biphenyl
Thorium Oxide Catalyst	X			Radioactive Half-life 1.4×10^{10} years.
Tributyl Phosphate	X	X		
Triethylene Glycol	X			
Vanadium	X	X		
Vinyl Acetate	X	X		
Waste Water Containing -				
- traces DNP			X	
- traces AN, Phenol and oily Materials			X	
- traces AN By-products			X	
Welding Particulates and Vapors		X		

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TOXICITY SURVEY

ACTION CATEGORY B - RELY ON INDUSTRY STUDIES*

Acrylonitrile

Ammonia

Benzene

Butadiene

Ethylene

Phenol

Styrene

Toluene

*Information previously transmitted by Curtis Elmer to S. L. Hunter.

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TOXICITY SURVEY

ACTION CATEGORY C - ASK MANUFACTURER

Manufacturer	Material	Information Obtained: Satisfactory	Information Obtained: Not Satisfactory	Manufactur Not Contact
American Cyanamid	Dilauryl Thiodi-propionate (DLTDP)			X
Arco	Ionol (Food Grade BHT)			X
Armak Chem. Div. Netherland Company	Armostat 310			X
Armak Chemical	Glycerol Monostearate			X
Betz	Corrosion Inhibitor ACN #1			X
Betz	Corrosion Inhibitor ACN #2			X
Betz	Foamtrol LT			X
Calgon	Coagulant Aid 233	X		
Calgon	Corrosion Inhibitor F98			X
Calgon	Water Additive SL500 (mixture of NTA & EDTA)			X
Calgon	TG-10	X		
Calgon	Trichelok K-5	X		
Diamond-Shamrock	Duolite Resin C-25			X
Diamond-Shamrock	Duolite Resin A-4			X
Dow Chemical	Dowtherm A			X
Dow-Corning	Antifoam FB-10			X
Hercules	CR 403	X		
Hercules	HF 502			X

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Manufacturer	Material	Information Obtained: Satisfactory	Information Obtained: Not Satisfactory	Manufactur Not Contact
Hercules	MB-103			X
John s-Manville	"Hydroflo" Filter Aid			X
Johns-Manville	Micro Cel T-38			X
Monsanto	Santobrite			X
Union Carbide	Carbowax 400 (USP)			X
Universal Oil Products	Antifoam "Unicor"			X

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TOXICITY STUDY

ACTION CATEGORY D - NO FURTHER CONSIDERATION

Material	
Acetic Acid	Ethyl Chloride
Acetone Cyanohydrin	Freon 22
Acetylene	Fuel Gas (Methane)
Alumina	Gas Field Condensate
Aluminum Chloride	Hexane
Aluminum Granules	Hydrazine
Ammonium Chloride	Hydrogen
Ammonium Sulfate	Hydrogen Chloride
Asbestos	Hydrogen Cyanide
Benzoic Acid	Hydrogen Fluoride
Calcium Chloride	Hydrogen Iodide
Carbon Dioxide	Hydrogen Sulfide
Carbon Monoxide	Iodine
Chorine	Kerosene
Chromate (Water Treatment)	Light Armoatic Naphthas (LAN)
Copper Inhibitor	Lactic Acid
Cyanide Complexes	Lactonitrile
Diesel Oil	Lime (Calcium Hydroxide)
Dimethyl Formamide	Mercury
Disodium Phosphate	Methane
Drying Agent (SiO_2, etc.)	Methanol
Ethane	Monoammonium Phosphate
Ethanol (SD-30)	Off-Gas (CH_4, H_2)

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TOXICITY STUDY

ACTION CATEGORY D - NO FURTHER CONSIDERATION

Material
Olefins (C_4-C_{10})
Oxalic Acid
Phosphoric Acid
Platinum Catalyst
Platinum Rhodium Catalyst
Potassium Hydroxide
Propane
Propionic Acid
Propylene
Rhodium
Sodium Bisulfite
Sodium Carbonate
Sodium Hexametaphosphate
Sodium Hydroxide
Sodium Sulfate
Sodium Sulfide
Sodium Sulfite
Soft Alkyl Benzene

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