

SHELL OIL COMPANY

SHELL CHEMICAL COMPANY

DEER PARK MANUFACTURING COMPLEX

PLAINTIFF'S EXHIBIT

SH-1628

DATE OCTOBER 9, 1975

TO DEER PARK MANUFACTURING COMPLEX -
ENVIRONMENTAL CONSERVATION -
SUPERINTENDENT

FROM STAFF ENGINEER - ENVIRONMENTAL
CONSERVATION - DEER PARK
MANUFACTURING COMPLEX

SUBJECT WASTE MATERIALS
GENERATED AT REFINERY

Attached is a list of various waste materials generated in the Deer Park Refinery. The wastes have been categorized as follows:

A. Granular --Spent Catalyst	228 M Lb/Year
B. Granular - Miscellaneous	1,498.3 M Lb/Year
C. Sludge - Oily	10,935 M Lb/Year
D. Sludge - Chemical	1,797.5 M Lb/Year
E. Solids - Chemical and Oil	167 M Lb/Year
F. Waste Materials to Refuse	20,000 M Lb/Year
Total	34,625.8 M Lb/Year

(The materials listed in "A" through "F" are disposed of in-house except for refuse. The refuse includes refuse generated at the Chemical Plant.)

G. Waste Materials Sold	11,278 M Lb/Year
H. Waste Materials Lost (Lost to Atmosphere or Wastewater)	Unknown
I. Waste Materials Stored	Unknown

The quantities reported here might be improved through review of Purchasing records. This would be a considerable task. In-house disposal consists of landfill, landfarming (sludge pits), and the effluent treaters. Some of the wastes listed in "A" through "E" may be disposed of in "refuse".

If you need additional information, please call me.

JDR:oc

cc: R. P. Frutiger
Env. Con. Chron

J. D. Ratje

DPMC-00983

LAM 007498

REFINERY WASTE MATERIALS

A. GRANULAR - SPENT CATALYST

<u>ITEM NO.</u>	<u>SOURCE</u>	<u>CONTACT</u>	<u>DESCRIPTION</u>	<u>QUANTITY, M LB/YR</u>
R-8	A-E	RDM	Catalyst Ni-Co/Mo ZnO 8 to 10% S Ceramics (All Changed out 8 Mo)	30 69 7
R-10	HUD-1	RDM	Catalyst Ni-Mo S (Changed out 2-3 Yr)	25
R-11	A-E	RDM	Catalyst Ni-Mo (Changed out 2 Yr)	15
R-15	SR-5	LRG	Catalyst (2200cu ft/yr) SO ₂ - Alumina (Changed out 3 Yr)	30
R-16	H-PT	LRG	Catalyst 3/8" x 1/4" Iron Oxide & Chromium (Changed Every 4 Yr)	40
R-37	Lube HT Unit	CEB	Catalyst HDS2A Co-Mo Alumina FeS Pyrophoric (Change out Every 2 Yr)	12
			SUBTOTAL	228

HCU - Hydrocracking Unit
LRG - L. R. Grounds
RDM - R. D. Madsen
A-E - Aromatics-East
SR-5 - Sulfur Plant
H-PT - Hydrogen Plant
GF - Geart Fikkert

DPMC-00984

LAM 007499

B. GRANULAR - MISCELLANEOUS

<u>ITEM NO.</u>	<u>SOURCE</u>	<u>CONTACT</u>	<u>DESCRIPTION</u>	<u>QUANTITY, M LB/YR</u>
R-71	CR	KSB	Spent Molecular Sieve, S & C1	100
R-72	CR	KSB	Alumina-Tail Gas Scrubber, C1 & S	41
R-73	CR	KSB	Filter Aid-Diatomaceous Earth-DEA	0.2
R-60	CC	AFO	Cat Spill-Turnaround, Silica-Alumina	40
R-65	LC	QCS	Bauxite-Treating Clay, 9 T/Month	228
R-46	Lab	CEB	Silica Gel - from Air Dryers	5
R-63	CC	AFO	Silica Gel - Air Dryer, 45M Lb/3 Yr	1.5
R-69	LC	QCS	Silica Gel - Air Dryer, 4M Lb/3 Yr	1.5
R-22	Tk D-340	DWL	Biosludge, Salts-Solids	50
R-55	GR	AKW	Plastic & Steel Rings, 1/2 T/3 Yr	0.3
R-51	GR	AKW	CFH Rock, Ceramic, & Coke, Pyrophoric-Lube Oil Oozes, 100M Lb/2 Yr	50
R-54	GR	AKW	Coked Mol Sieve from n-Paraffin Pyrophoric	210
R-1	HCU	LRG	Granular Coke with Oil-Water Pyrophoric, Sour (4 Lugger Pans Every 3 Years)	11
R-5	TC	PL	Tube Coke-Dust, 7 Drums/Year	3
R-6	TC	PL	Coke from Reaction Chamber (10 cu yd/2 yr)	10

CEB - Chet Beecher
 CFHT - Cat Feed HT
 AKW - A. K. Washburn
 DHT - Dist. HT
 AFO - Al Ott
 CC - Catalytic Cracking
 LC - Lube C

QCS - Curt Stanberry
 Lab - Lube A & B
 CR - Cat Reformer
 KSB - Ken Baird
 DWL - Don Lanning
 GR - Gas Recovery
 TC - Thermal Cracking
 PL - Pete Lanchak

B. GRANULAR - MISCELLANEOUS (Cont'd)

<u>ITEM NO.</u>	<u>SOURCE</u>	<u>CONTACT</u>	<u>DESCRIPTION</u>	<u>QUANTITY, M LB/YR</u>
R-39	Lab	CEB	Coke from Exchangers & Vacuum Towers (20 T/3 Yr)	13
R-64	CC	AFO	Coke - Cleanout When Down 15 Lugger Pans/Year	130
R-52	GR	AKW	Bed Support Dist. HT, Pyrophoric 10,000 Lb/2 Years	5
R-30	Disp.	DBM	Oily Dirt from Inside Tank Dikes Leaks	100
R-19	Disp.	DBM	Rust and Dust from Kero Tanks FeS	130
R-58	CC	AFO	Catalyst Fines-Silica Dust (Now to Clay Pond-Slurried with H ₂ O)	550
SUBTOTAL				1,498.3

C. SLUDGE - OILY

R-17	Disp.	DRD	Crude BS&W	10,000
R-31	Dist.	GF	Sludge from Vac. Tower Filters	15
R-36	Lab.	CEB	Sludge, Oily from Feed Tanks When Leak Occurs	300
R-62	CC	AFO	Catalyst from Feed Tanks from Recycling on Start-up	20
R-7	CC	AFO	Catalyst - Slurry Oil Tanks	100
R-67	LC	QCS	BS & Rust - 6 or 8 Tanks	250
R-68	LC	QCS	Wax Spills and Sand	250
SUBTOTAL				10,935

AW - Aromatics West
 RRI - Bob Ingram
 WA - West Alkylation
 JEG - John Garrison
 T&S - Treating & Solvents
 SFG - Floyd Good

DBM - Don McCants
 Dist. - Distilling
 GF - Gaert Fikkert
 Disp. - Dispatching
 DRD - Don Deister

D. SLUDGE - CHEMICAL

ITEM NO.	SOURCE	CONTACT	DESCRIPTION	QUANTITY, M LB/YR
R-18	Disp.	DRD	Leaded Sludge	60
R-2	HC	LRG	Triethylene Glycol Sludge	0.5
R-33	WA	JEG	H ₂ SO ₄ Storage Sludge	27
R-35	T&S	SFG	H ₂ SO ₄ Storage Sludge	60
R-56	GR	AKW	Caustic Sludge	45
R-75	CR	KSB	20% Caustic + Sulfide Biotreaters	550
R-76	CR	KSB	20% Caustic + Carbonate	<u>1,100</u>
SUBTOTAL				1,797.5

E. SOLIDS - CHEMICAL AND OIL

R-14	Sulfur	LRG	Elemental Sulfur - Spills & Leaks 20 cu yd Annually	45
R-25	Disp.	DWL	Wax Set up in Hoses - Reprocessed Through Lube C	5
R-42	Lab.	CEB	Wax Chips from Clean-up	20
R-38	Lab.	CEB	Asphalt Drips - 10-20 gal Drums/Week	87
R-20	Disp.	DRD	Solids - Lead Contaminated Clothing, Aggregate, Dirt	<u>10</u>
SUBTOTAL				167

F. WASTE MATERIALS TO REFUSE

R-4, R-13, R-24	Hoses - Cargo, Steam, Air, Hydraulic,
R-26, R-43, R-49	Hydrocarbon, etc.
R-56, R-41, R-66	Tires
R-27, R-29, R-44	Containers - Drums* 5 gal, 1 gal, & smaller.
R-45, R-21	Samples, Paint, Oil, Additives, etc.
Includes Chem.	
Plant & Refinery	Pallets; Seals-Floating Roof Tanks; Filter Cartridges; Outfall Collectors; Debris from Water Front Clean-up; Trash; Garbage
TOTAL REFUSE, 50,000 cu yds/year - Estimated Weight	
20,000	
GRAND TOTAL	
34,625.8	

2,885 M LB/MONTH

*Some drums sold for reclamation.

DFMC-00987

LAM 007502

G. WASTE MATERIALS SOLD

<u>ITEM NO.</u>	<u>SOURCE</u>	<u>CONTACT</u>	<u>DESCRIPTION</u>	<u>QUANTITY, M LB/YR</u>
R-70	CR	KSB	HDS-2 Cat. Pellets (Change 4-5 Yr)	30
R-32	HDU-2	GF	Catalyst (Shell 244 HT) - Co-Mo - Metal Recovery, 117M lb/4 yr	30
R-50	CFHT	AKW	Shell 324 Cat. Ni/Mo, Silica/ Alumina/Metals Recovery (400,000 lb/2 Years)	200
R-53	DHT	AKW	Shell 344 Cat. Co/Mo Alumina/ Metals Recovery, 95M lb/2 Yr	43
R-59	CC	AFO	Spent Catalyst - 1/2 T/D, Sold as Equilibrium Catalyst, Silica/Alumina	365
R-34	T&S	SFG	Caustic - 10-14% Cresylic Acid Solid to Merichem	10,395
R-3	HCU	LRG	1/16" Extruded Catalyst: Ni-3%, Mo-11%, Fl-6%, P-1%, Al ₂ O ₃ - 1/16" Extruded Catalyst: Ni-4.5%, T-3%, Fl-3.5% on Al ₂ O ₃ /SiO ₂ (Both Changed out 3 Years) 1/4" Alumina Balls	60 120 35
			SUBTOTAL	11,278

H. WASTE MATERIALS RECOVERED

R-23	CC	AFO	Wax Spills & Drips from Tank Car Cleaning - 2 Lugger Pans/Day - Reprocessed Through Lube & CC	400
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I. WASTE MATERIALS LOST

R-61	CC	AFO	Catalyst to Atmosphere, 1 T/D Silica-Alumina	730
General Some Areas (R-40)			Sour Water Sump Vapor, H ₂ S and NH ₃	?
R-12			Xylene Vapors from Xylene Spill to Sewer - Loss of Pump Suction	?
General Some Areas (R-74)			Hydrocarbons - C ₁₀ Vented to Atmos.	?

H. WASTE MATERIALS LOST (Cont'd)

<u>ITEM NO.</u>	<u>SOURCE</u>	<u>CONTACT</u>	<u>DESCRIPTION</u>	<u>QUANTITY, M LB/Y</u>
R-9	S&T	SFG	Sulfolane (10 ppm in 120 B/D H ₂ O) (Sulfolane 153 lb/yr)	15,330
			200-300 B H ₂ O with 1 B Sulfolane 1 or 2 times a year (Sulfolane 350 lb/yr)	130
			Kills biotreater bacteria.	
R-48	AW	RRI	Sulfolane Sludge (5% in Water) 500 B/3 Years on Turnaround (Sulfolane = 2900 lb/yr)	58
			Kills biotreater bacteria.	

I. WASTE MATERIALS STORED

General Most Area (R-28)		Lumber, Ties, Piling, Telephone Poles, etc.	?
R-32	All Areas	Insulation - Bagged & Buried Asbestos	?