

1

BROWNSVILLE NAVIGATION DISTRICT
PRESENTATION
24 AUGUST 1993

-UPDATE-

DIVESTITURE / RCRA FACILITY INVESTIGATIONS

UNION CARBIDE - BROWNSVILLE, TX SITE

Presented by
Robert E. O'Bryan

reo25:bv270-1

BRB 0684

AGENDA

OBJECTIVES: **PROVIDE UPDATE OF ENVIRONMENTAL INVESTIGATIVE ACTIVITIES**

I. **BACKGROUND**

A. GENERAL SITE HISTORY 3
B. REGULATORY STATUS 3-4
C. SITE HYDROGEOLOGICAL SETTING 4

II. **ENVIRONMENTAL ASSESSMENT**

A. TWC RISK REDUCTION RULES CRITERIA 5
B. EVALUATION PROCEDURES 6

III. **INVESTIGATIVE RESULTS / CORRECTIVE MEASURES**

A. SITE WIDE CONSTITUENTS / TECHNICAL POSITION 7
B. LOCATION SPECIFIC CONSTITUENTS / CORRECTIVE MEASURES 8-12

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I. BACKGROUND

- **GENERAL SITE HISTORY**

  - 462 ACRES OF LEASED BND PROPERTY (1958 - 1993; 2 YR RENEWAL OPTION)
  - PREVIOUSLY USED BY 3 OTHER FACILITIES (SYNTHETIC FUEL PRODUCTS)
  - UCC OPERATED FACILITY FROM 1961 - 1983 (WATER SOLUBLE - OXYGENATED-MATERIALS); DISMANTLED (EXCEPT BLDGS / H_2O TOWER) BY MID 1992

- **REGULATORY STATUS**

  - BALL MILL RESIDUE BASIN (BMRB)
    - ~1 ACRE HAZARDOUS WASTE FACILITY; 1975 - MID 1983
    - CLEAN CLOSED 1986; EPA "REVOKED" CLOSURE 1987
    - 1989 - 1990; SLUDGE / SUBSOIL REMOVAL
    - MAR 93; CLOSURE BY REMOVAL EQUIVALENCY DEMONSTRATION PETITION SUBMITTED TO EPA
    - ➜ EPA CURRENTLY REVIEWING PETITION; ANTICIPATE SEP 93 RESPONSE

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I. BACKGROUND

(CONT'D)

- **TWC RCRA PERMIT**
  - 1990; SITE RCRA FACILITY ASSESSMENT CONDUCTED
  - NOV 92; TWC RCRA PERMIT ISSUED
    [BMRB POST-CLOSURE CARE AND RFI - 26 SWMUs]

- **SITE GEOLOGICAL / HYDROGEOLOGICAL SETTING**
  - AVERAGE RAINFALL 26"
    AVERAGE TEMPERATURE 74° F
    EVAPORATION EXCEEDS RAINFALL 31" / YEAR
  - RIO GRANDE 100 YEAR FLOOD PLAIN;
    BAY-ESTUARY COASTAL ZONE
  - FLAT; GENTLE NORTHEAST SLOPING
    8 - 10 FEET ABOVE SEA LEVEL
  - 6 STRATIGRAPHIC UPPER ZONES
    [ZONES 2, 4*, 6 - AQUIFERS; * DISCONTINUOUS AQUIFER]
  - GROUND WATER FLOW EAST -NORTHEAST; 2' - 6' / YEAR
  - NO TIDAL EFFECTS
  - GROUNDWATER CLASSIFIED VERY "SALINE TO BRINE"
    [30,000 - 40,000 mg/l TDS]

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II. ENVIRONMENTAL ASSESSMENT

A. TWC RISK REDUCTION RULES (R^3) CRITERIA

- R^3 EFFECTIVE JUN 93;
  ALLOW CLOSURE TO RISK BASED CRITERIA

- CLOSURE UNDER 3 STANDARDS:

  - STANDARD 1 BACKGROUND OR PQLs
  - STANDARD 2 HEALTH-BASED RISK CONCENTRATION VALUES GENERATED PER TWC PROCEDURES; REQUIRES DEED RECORDATION OF CLOSURE
  - STANDARD 3 OTHER RISK BASED CRITERIA PROPOSED BY THE OWNER AND IF ACCEPTED, REQUIRES DEED RECORDATION AND USUALLY POST-CLOSURE MONITORING

- DIFFERENT R^3 CRITERIA APPLY FOR DIFFERENT MEDIA [SURFACE SOILS (<2'), DEEPER SOILS, GROUND WATER]

- DIFFERENT CRITERIA ALSO APPLY TO LAND USE [RESIDENTIAL, INDUSTRIAL]

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II. ENVIRONMENTAL ASSESSMENT *(CONT'D)*

B. EVALUATION PROCEDURES

1. MASTER ANALYTE LIST DEVELOPED (~ 90 COMPOUNDS)

   ~ 196 COMPOUNDS REASONABLY BE PRESENT (PROCESSES, PAST ANALYSES, CONTAMINANT PROPERTIES)-ELIMINATE COMPOUNDS NOT EXPECTED TO PERSIST, LAB USE ONLY, MAINTENANCE MATERIALS

   RFI SWMU - ~ 71 APPENDIX IX COMPOUNDS

   DIVESTITURE - MASTER ANALYTE LIST
   [SPECIFIC TO WHAT WAS KNOWN ABOUT THAT SPECIFIC LOCATION]

2. ANALYTICAL RESULTS ENTERED INTO DATABASE

3. CRITERIA DEVELOPED FOR R^3 STANDARD CLOSURES AND DIFFERENT MEDIA USED TO SCREEN SAMPLE RESULTS BY SPECIFIC ANALYTES, LOCATION, AND MATRIX

4. RESULTS USED TO DETERMINE R^3 STANDARD

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III. INVESTIGATIVE RESULTS / CORRECTIVE MEASURES

- **OF THE 506 DIVESTITURE / RFI SAMPLES, MOST OF THE ANALYTES WERE < STANDARD 1**

- **SITE WIDE CONSTITUENTS / TECHNICAL POSITION**

  - ***METALS (e.g., arsenic, cobalt, copper, and lead)* > STD 2**
    [As >3.27 ppm; (4 - 20 ppm)] [Co >53 ppm; (56 - 71 ppm)]
    [Cu >85 ppm; (85 - 2500 ppm)] [Pb >150 ppm; (160 - 920 ppm)]

    - **REFLECTIVE OF GENERAL INDUSTRIAL AREA BACKGROUND**

  - ***NO CORRECTIVE ACTION REQUIRED***

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III. INVESTIGATIVE RESULTS / CORRECTIVE MEASURES *(CONT'D)*

- **LOCATION SPECIFIC CONSTITUENTS / CORRECTIVE MEASURES**

  - ***POLYNUCLEAR AROMATIC HYDROCARBONS***
    @ TANK 1241 (FORMIC ACID) AREA

CONSTITUENT	HIGHEST CONC. (ppm)	STD 1 (ppm)	STD 2 (SAI) (ppm)
Benzo(a)pyrene	7.6	0.66	0.78
Chrysene	9.6	0.66	0.78

- **ORIGIN OF PAHs UNKNOWN**
- **POSSIBLE PREDECESSOR COMPOUND**

  - ***CORRECTIVE ACTION: LANDFARM***

  - ***MERCURY [shallow soil]***
    @ GENERAL FACILITY AREA
    [> 20 ppm; (23 ppm)]

- **VALUE IS ISOLATED; NOT SIGNIFICANTLY DIFFERENT ANALYTICALLY FROM CRITERIA**
- **AREA WHERE WASTES WERE NOT MANAGED**

[MODEL OR SAMPLE FOR LEACHING]

  - ***NO CORRECTIVE ACTION REQUIRED***

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III. INVESTIGATIVE RESULTS / CORRECTIVE MEASURES *(CONT'D)*

- ***MERCURY*** ***[shallow soil]***
  @ SWMUs Q / E (GARBAGE AREA / CARBON LAKE)
  [> 20 ppm: (27 ppm)]

  - **AREA OF FACILITY LIKELY TO BE CLOSED AND CAPPED DUE TO ASBESTOS**
  - **POSSIBLE DISPOSAL OF OTHER MATERIALS**

  CORRECTIVE ACTION: CAP AND CONTAIN

- ***ASBESTOS***
  @ SWMU R (INSULATION DISPOSAL AREA)

  - **AREA OF FACILITY LIKELY TO BE CLOSED AND CAPPED**
  - **POSSIBLE DISPOSAL OF OTHER MATERIALS**

  CORRECTIVE ACTION: CAP AND CONTAIN

- ***TPH, LEAD, MERCURY, BIS (ETHYLHEXYL) PHTHALATE***
  @ SWMU Z (OLD OIL SKIMMER PITS)

  - **ADDRESS SPECIFIC RFI ANALYTES OF CONCERN AND TO REMOVE TPH**

  CORRECTIVE ACTION: REMOVE AND LANDFILL

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III. INVESTIGATIVE RESULTS / CORRECTIVE MEASURES *(CONT'D)*

➜ *MERCURY [shallow soil]*
@ SWMUs Q / E (GARBAGE AREA / CARBON LAKE)
[>20 ppm; (27 ppm)]

- AREA OF FACILITY LIKELY TO BE CLOSED AND CAPPED DUE TO ASBESTOS
- POSSIBLE DISPOSAL OF OTHER MATERIALS

➜ *CORRECTIVE ACTION: CAP AND CONTAIN*

➜ *ASBESTOS*
@ SWMU R (INSULATION DISPOSAL AREA)

- AREA OF FACILITY LIKELY TO BE CLOSED AND CAPPED
- POSSIBLE DISPOSAL OF OTHER MATERIALS

➜ *CORRECTIVE ACTION: CAP AND CONTAIN*

➜ *TPH, LEAD, MERCURY, BIS (ETHYLHEXYL) PHTHALATE*
@ SWMU Z (OLD OIL SKIMMER PITS)

- ADDRESS SPECIFIC RFI ANALYTES OF CONCERN AND TO REMOVE TPH

➜ *CORRECTIVE ACTION: REMOVE AND LANDFILL*

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III. INVESTIGATIVE RESULTS / CORRECTIVE MEASURES *(CONT'D)*

➜ *REFER TO CHART BELOW*
@ SWMU T (MIXED ACID / RESIDUE OIL POND),
SWMU AOC No. 1 (LEAKING UNDERGROUND TANK),
SPECIAL AREA CG (SOUTH FIRE TRAINING AREA)

CONSTITUENT	SWMU / SA	HIGHEST CONC. (ppm)	STD 2 (ppm)
1,1 Dichloroethene	T	0.88	0.7
1,1 Dichloroethene	CG	1.0	0.7
1,1 Dichloroethene	AOC No.1	0.99	0.7
Benzene	AOC No.1	1.9	0.5
Vinyl Chloride	AOC No.1	0.65	0.2

- TECHNICAL AND REGULATORY ARGUMENTS ARE BEING DEVELOPED TO JUSTIFY NO ACTION
  - CONCENTRATIONS ARE CLOSE TO STD 2
  - NONE OF THE SURROUNDING WELLS SHOWED COMPARABLE CONCENTRATION
  - BIASED SAMPLING; HIGHEST CONCENTRATIONS
  - GROUNDWATER NOT POTABLE
  - GROUNDWATER DOES NOT CONNECT TO DRINKING SURFACE WATER SOURCE

➜ *NO CORRECTIVE REQUIRED*

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III. INVESTIGATIVE RESULTS / CORRECTIVE MEASURES *(CONT'D)*

➜ **UCC TO ADDRESS THE FOLLOWING AREAS REGARDING DIVESTITURE - BASED UPON VISUAL IMPACT OR NON APPENDIX IX ANALYTES:**

- **TANK 2301 NON HAZARDOUS WASTE ("PURPLE" DIRT)**
- **TANK 4301 NON HAZARDOUS WASTE ("OILY DIRT")**
- **IRON CATALYST PILES**
- **SWMU Z (OLD OIL SKIMMER PITS)**

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FIGURE X-X
LOCATIONS OF AREAS EXCEEDING STANDARD 2 OR OF CONCERN TO RFI
UNION CARBIDE CHEMICALS AND PLASTICS COMPANY, INC.
BROWNSVILLE, TEXAS

DRAWN:	SJF	DATE	12 JUL 93
APP'VD:		REVISED	

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SPECIAL AREAS		
UNIT NAME	LETTER CODE	ZONE
BULLET TANK	D	76
ENERGY OXYGEN SUMP	K	26
FINAL OIL SEPARATOR SUMP	L	74
FIRE PIT OIL SEPARATOR SUMP	M	58
FIRE PIT SUMP	N	58
FLARE PIT	P	98
MAIN OFFICE SEPTIC TANK SUMP	S	53
NO 1 REACTION SUMP	U	72
NO. 2 REACTION SUMP	V	82
PUMPHOUSE OIL SEPARATOR SUMP	AB	28
RECOVERY OIL SEPARATOR SUMP	AD	63
RECOVERY SUMP	AE	63
SEPTIC TANK NUMBER 10	AF	42
SEPTIC TANK NUMBER 15	AG	73
SEPTIC TANK NUMBER 18	AH	24
SEPTIC TANK NUMBER 19	AI	52
SEPTIC TANK NUMBER 21	AJ	82
STEEL MILL SLAG	AM	56
SURGE RECEIVER	AN	82
TANK 3211	AU	52
TANK 3214	AV	52
TANK 4226	AW	62
TANK 4240	AX	62
TANK 4265	AY	63
TANK 5208	BA	53
TANK 5225	BB	53
UTILITY SUMP	BE	26
WACKER SUMP	BF	73
WASTE BURNER SUMP	BG	76
NO 1 REACTION CAUSTIC TANK	BI	72
NO. 2 REACTION CAUSTIC TANK	BJ	82
TANK 3210	BK	52
CATALYST ZONE 58	CA	58
PAINT SHOP	CC	48
MAIN SUBSTATION AREA	CD	18
PCB TRANSFORMERS	CE	26
PURPLE DIRT PILE	CF	82
SOUTH FIRE TRAINING AREA	CG	68

SOLID WASTE MANAGEMENT UNITS		
UNIT NAME	LETTER CODE	ZONE
100 ACRE EVAPORATION POND	05	99
100 ACRE EVAPORATION POND	06	99
100 ACRE EVAPORATION POND	07	99
100 ACRE EVAPORATION POND	08	99
BALL MILL RESIDUE DEMPSEY DUMPSTER LOADING AREA AND TRUCK PAD	B	82
CARBON LAKE	E	96, 98
CATALYST ZONE 45	F	45
CATALYST ZONES 82 & 92	G	82, 92
CATALYST ZONE 88	H	88
DRUM CLEANING AREA	J	76
FIRE TRAINING AREA	O	68
GARBAGE AREA	Q	96, 98
INSULATION DISPOSAL AREA	R	98
MIXED ACID/RESIDUE OIL POND	T	86
NON-UCCAP GROUND BURNER	W	82
NON-UCCAP POND	X	44, 45
NORTH EVAPORATION POND	Y	82, 92
OLD OIL SKIMMER PITS	Z	76
PONDS OF NON-UCCAP ORIGIN	AA	45
RAIL CAR LOADING AREA	AC	12
SPILL CATCH FUEL OIL	AL	26
TANK 1251	AQ	13
TANK 1301	AR	14
TANK 4307 AREA	AZ	75
LEAKING UNDERGROUND STORAGE TANK	AOC #1	46
RELEASE FROM TANK 3202 PUMP STATION	AOC #2	52
MAINTENANCE STORAGE AREA	AOC #4	78
TANK 5201	AOC #5	53
TEMPORARY BLDGS WATER HOLDING AREA	BC	12

HAZARDOUS WASTE MANAGEMENT UNIT		
UNIT NAME	LETTER CODE	ZONE
BALL MILL RESIDUE BASIN	01	96

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FIGURE X-X
REFERENCE TABLES FOR
SPECIAL AREAS AND
WASTE MANAGEMENT UNITS
UNION CARBIDE CHEMICALS AND
PLASTICS COMPANY, INC.
BROWNSVILLE, TEXAS

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ACL Doc 16953 · Page 14 of 14