

BROWNSVILLE NAVIGATION DISTRICT  
PRESENTATION  
24 AUGUST 1993

**-UPDATE-**

**DIVESTITURE / RCRA FACILITY INVESTIGATIONS**

**UNION CARBIDE - BROWNSVILLE, TX SITE**

*Presented by  
Robert E. O'Bryan*

## **AGENDA**

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

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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<sub>2</sub>O 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

**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]

## **II. ENVIRONMENTAL ASSESSMENT**

### **A. TWC RISK REDUCTION RULES (R<sup>3</sup>) CRITERIA**

- **R<sup>3</sup> 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<sup>3</sup> CRITERIA APPLY FOR DIFFERENT MEDIA  
[SURFACE SOILS (<2'), DEEPER SOILS, GROUND WATER]**
- **DIFFERENT CRITERIA ALSO APPLY TO LAND USE  
[RESIDENTIAL, INDUSTRIAL]**

## **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<sup>3</sup> STANDARD CLOSURES AND DIFFERENT MEDIA USED TO SCREEN SAMPLE RESULTS BY SPECIFIC ANALYTES, LOCATION, AND MATRIX**

#### **4. RESULTS USED TO DETERMINE R<sup>3</sup> STANDARD**

### **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**

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

#### ● **LOCATION SPECIFIC CONSTITUENTS / CORRECTIVE MEASURES**

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

| CONSTITUENT    | HIGHEST CONC.<br>(ppm) | STD 1<br>(ppm) | STD 2 (SAI)<br>(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**

**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**

### **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**

### **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.<br>(ppm) | STD 2<br>(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**

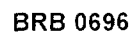
➔ **NO CORRECTIVE REQUIRED**

**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)**

reo25:bv270-12



| SPECIAL AREAS                 |             |      |
|-------------------------------|-------------|------|
| UNIT NAME                     | LETTER CODE | ZONE |
| BULLET TANK                   | D           | 76   |
| DIENEY DITCH SLUMP            | K           | 26   |
| FINAL OIL SEPARATOR SLUMP     | L           | 74   |
| FIRE PIT OIL SEPARATOR SLUMP  | M           | 58   |
| FIRE PIT SLUMP                | N           | 58   |
| FLARE PIT                     | P           | 98   |
| MAIN OFFICE SEPTIC TANK SLUMP | S           | 53   |
| NO. 1 REACTION SLUMP          | U           | 72   |
| NO. 2 REACTION SLUMP          | V           | 82   |
| PURPOSE OIL SEPARATOR SLUMP   | AB          | 28   |
| RECOVERY OIL SEPARATOR SLUMP  | AD          | 63   |
| RECOVERY SLUMP                | 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 SLUG               | AM          | 56   |
| SLUDGE RECEIVER               | AN          | 82   |
| TANK 3711                     | AU          | 52   |
| TANK 3714                     | AV          | 52   |
| TANK 4226                     | AW          | 62   |
| TANK 4240                     | AX          | 62   |
| TANK 4265                     | AY          | 63   |
| TANK 5208                     | BA          | 53   |
| TANK 5275                     | BB          | 53   |
| UTILITY SLUMP                 | BE          | 26   |
| WASHER SLUMP                  | BF          | 73   |
| WASTE BURNER SLUMP            | BG          | 76   |
| NO. 1 REACTION CAUSTIC TANK   | BI          | 72   |
| NO. 2 REACTION CAUSTIC TANK   | BJ          | 82   |
| TANK 3710                     | BK          | 52   |
| CAUSTIC ZONE 58               | CA          | 58   |
| PANEL SHOP                    | CC          | 48   |
| MAIN SUBSTATION AREA          | CD          | 18   |
| POB TRANSFORMERS              | CE          | 28   |
| PURPLE DIRT PILE              | CF          | 82   |
| SOUTH FIVE TONNAGE AREA       | CG          | 68   |

| SOLID WASTE MANAGEMENT UNITS                                |             |        |
|-------------------------------------------------------------|-------------|--------|
| UNIT NAME                                                   | LETTER CODE | ZONE   |
| 100 ACRE EVAPORATION POND                                   | 05          | 89     |
| 100 ACRE EVAPORATION POND                                   | 06          | 89     |
| 100 ACRE EVAPORATION POND                                   | 07          | 89     |
| 100 ACRE EVAPORATION POND                                   | 08          | 89     |
| BALL MILL RESIDUE NEAREST QUARTER LOADING AREA AND ROAD PAV | B           | 62     |
| CRACKER LINE                                                | E           | 96, 98 |
| CAUSTIC ZONE 45                                             | F           | 45     |
| CAUSTIC ZONES 82 & 92                                       | G           | 82, 92 |
| CAUSTIC ZONE 88                                             | H           | 88     |
| DRUM CLEANING AREA                                          | J           | 76     |
| FIRE TONNAGE AREA                                           | O           | 68     |
| GARBAGE AREA                                                | Q           | 96, 98 |
| REGULATION DISPOSAL AREA                                    | R           | 98     |
| WETTED AOD/RESIDUE OIL POND                                 | T           | 86     |
| NON-LOCKER GROUND BURNER                                    | W           | 82     |
| NON-LOCKER POND                                             | X           | 44, 45 |
| NORTH EVAPORATION POND                                      | Y           | 82, 92 |
| OLD OIL SHOWER FITS                                         | Z           | 76     |
| PONDS OF NON-LOCKER OIL                                     | AA          | 45     |
| PAV OIL LOADING AREA                                        | AC          | 12     |
| SPEL CATCH POND OIL                                         | AL          | 26     |
| TANK 1251                                                   | AO          | 13     |
| TANK 1301                                                   | AR          | 14     |
| TANK 4207 AREA                                              | AZ          | 75     |
| LEAVING UNDERGROUND STORAGE TANK                            | AOC #1      | 46     |
| RELEASE FROM TANK 2002 PUMP STATION                         | AOC #2      | 52     |
| MAINTENANCE STORAGE AREA                                    | AOC #4      | 78     |
| TANK 5201                                                   | AOC #5      | 53     |
| TEMPORARY BLDG WATER HOLDING AREA                           | BC          | 12     |

| HAZARDOUS WASTE MANAGEMENT UNIT |             |      |
|---------------------------------|-------------|------|
| UNIT NAME                       | LETTER CODE | ZONE |
| BALL MILL RESIDUE BURN          | 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

DATE: 12 JUL 93

BY: S.F.

DATE: 12 JUL 93

REVISION:

PROJECT NUMBER:

6900-080