

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC
SOLVENTS AND COATINGS MATERIALS DIVISION
STAR ROUTE BOX 90
BROWNSVILLE, TEXAS 77821

May 31, 1991

To: Mr. Carl Wells
Project Manager - Midwest Steel

Mr. John/Rick Kealy
Project Managers - International Environmental Corp.

Mr. Donald Lancon
President - Lancon and Sons Inc.

Copy: Mr. Bill Callaway
Superintendent - Brown & Root Industrial Services

Mr. Dub Garnett
Project Manager - Union Carbide Chemicals and Plastics Co.

Gentlemen:

There have been several instances here at the Union Carbide Brownsville, Texas Facility where the Contractors/Project Managers have had some of his employees violate our safety procedures. I feel it is time for us to review the Plant Safety Procedures one more time.

I would like each and every one of you to take this document home with you to review. I would like to schedule a meeting on Monday morning at 9:00 A.M. to go over the document and any feedback or comments you might have. If the document meets your satisfaction, I would like for each of you to schedule a meeting with your employees sometime on Monday to go over the entire document with them. I expect you as Project Managers/Contractors to go over our plant safety procedures with your employees. I would like for Dub and I to both be present when you conduct your meetings.

Please understand that any violations of our safety policies and procedures will not be tolerated. I expect each and every one of you to comply and cooperate with our plant rules.

Belia Cortez
Belia Cortez
Enclosures

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UNION CARBIDE BROWNSVILLE TEXAS - PLANT SAFETY RULES

I. PURPOSE:

To provide safety controls that will minimize personal injury and prevent damage to equipment. The rules apply to ALL personnel assigned to jobs in the plant.

II. POLICY:

It is impossible to list every hazard which might be encountered in an industrial plant. Therefore, safety restrictions are not limited to just the rules stated below. All employees must follow the safe practices or procedures given in written or oral job instructions. All safety requirements specified must be observed.

Management requires all employees to use good judgment in the safe execution of their jobs. Violation of safety rules or failure to follow accepted safe practices or procedures will be cause for TERMINATION.

Each and every time Contractors or vendors are at the gate, the Guard on duty will stop the individuals, have him sign the plant entry log, and ask that all matches and cigarette lighters be left at the gate.

II. POLICY (CONT'D):

The guard will then call the Project Manager/Contractor that an individual is at the gate to see him. It will be the responsibility of the Project Manager/Contractor or his designate to come to the gate and inform the the Contractors or Vendors of the general plant safety rules and regulations that are applicable to our plant operation, and to provide the individuals with hard hats and safety glasses.

The Project Manager/Contractor or his designate will be accountable for issuing the prepared written copies of general plant safety instructions to the Contractors or Vendors and their employees. Project Manager/Contractor or his designate will escort the Contractors or Vendors to the area(s) in the plant. Contractor and Vendor must report incidents or accidents to the person responsible for bringing them in the plant. For instance, all fires, *injuries, hazardous incidents, or potentially hazardous incidents must be reported. Project Manager/Contractor will issue a report to the Site Manager as soon as the incident has been taken care. All work will be stopped until the report is turned in.

*Injuries: an act that damages or hurts. 2. hurt, damage, or loss sustained.

III. RULES; GENERAL

1. Matches or cigarette lighters are not allowed in the plant.
2. Smoking in the plant is prohibited. Violators are subject to immediate discharge. For purpose of this policy, Building #259, is not construed to be in the plant.
3. Clarity and speed of all communications are vital to the safe and efficient operation of the plant. It is in this interest that only ENGLISH be utilized in oral and written communications during working hours.
4. Horseplay in the plant will not be tolerated.
5. The maximum plant speed limit is 20 MPH. In congested areas the speed limit is reduced to 5 - 15 MPH. Stop, warning or restriction, and safety signs will be followed.
6. Do not get off moving vehicles at any time. Riding on running boards, or having any part of the body extending outside truck bed is strictly forbidden. All riders must be seated.

III. RULES: GENERAL (CONT'D.)

7. Use of spark producing tools, welding, cutting, or the use of any tool or machine which might, through its operation produce a spark or flame, will require a properly executed HWP (Hazardous Work Permit).
The work done by the secondary contractor or vendor will be subject to the restrictions on the Hazardous Work Permit, and no changes will be allowed unless the permit is rewritten. The Hazardous Work Permit must remain posted at the job site throughout the duration of the work covered by the permit.
8. Report all injuries immediately.
9. Secondary contractors and vendors shall check with the guard at the main gate before entering or leaving the plant.
10. In addition to the above requirements, secondary contractors and their personnel shall be responsible for any particular requirements so specified within their work contract.
11. Drinking, or the possession of liquor or habit-forming drugs is prohibited on plant property. No one under their influence will be allowed to work.
12. Prohibited weapons, as defined by the Texas Penal Code, are not allowed in the plant.

III. RULES: GENERAL (CONT'D.)

13. Safety belts shall be worn when working from an area 6 feet or more above ground and not having proper guard railings and platform. Safety belts are not to be altered to size or length. Lanyards are to be secured to a sound structure in case of a fall. (Not to scaffolding)
14. No employee shall stand on the top step of any step-ladder, nor shall one straddle a step ladder with one foot on each run. Wooden ladders are to be used only by electricians. No one wearing a face shield or welding hood shall work from any ladder.

IV. SAFETY EQUIPMENT:

1. Spectacle type safety glasses must be worn at all times while you are in the plant with the exception of offices. Contact lens will not be worn in the plant. Special goggles provided must be worn where called for in instructions, written or oral.
2. Hard hats must be worn at all times while you are in the plant.

IV. SAFETY EQUIPMENT (CONT'D):

3. Employees are encouraged to wear safety shoes. Employees who choose not to wear safety shoes shall wear shoes that comply with the following:
 - a. Shoes shall have a flexible sole.
 - b. Shoes shall have a heel height not to exceed 3" measured vertically from inside the heel.
 - c. Material of construction for shoes worn when working in the plant shall be leather or man-made material that provides equal protection.
 - d. Moccasins, open toe shoes or CANVASS SNEAKERS SHALL NOT be worn when working in the plant.
4. Do not wear loose clothing around moving machinery. Shirts with sleeves (minimum length, standard short or half) will be worn at all times while in the plant. MUSCLE SHIRTS, or going without a shirt will not be permitted in the plant.
5. Hearing protection must be worn at all times if you work in areas specified as noise areas.

EXHIBIT A

I. PREPARATION OF EQUIPMENT FOR MAINTENANCE

1. INTRODUCTION:

THIS SECTION DEALS WITH THE RESPONSIBILITIES AND PROCEDURES FOR PREPARING EQUIPMENT FOR MAINTENANCE.

THIS INCLUDES SUCH EQUIPMENT AS COLUMNS, TANKS, ENGINES, COMPRESSORS, LINES, SWITCH GEAR AND MOBILE EQUIPMENT.

THE PROCEDURE AS PRESENTED IS THE BASIC MINIMUM REQUIREMENT AND SHALL BE FOLLOWED THROUGHOUT THE BROWNSVILLE PLANT. NO DEVIATIONS ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE PLANT MANAGER.

2. GENERAL:

PREPARING VESSELS OR EQUIPMENT FOR OPENING AND ENTRY OR HAZARDOUS WORK MEANS TO DO ANY OR ALL OF THE FOLLOWING TO MAKE THE WORK SAFE:

- A. EMPTY OF ANY HAZARDOUS LIQUID.
- B. VENT
- C. PURGE
- D. BLIND OR DISCONNECT
- E. WASH
- F. COOL
- G. VENTILATE

2. GENERAL: (CONT'D)

- H. TEST FOR HAZARDOUS GASES
- I. CHECK FOR SPECIAL REQUIREMENTS
- J. TEST FOR OXYGEN CONTENT

VESSELS AND EQUIPMENT AS USED HERE INCLUDE CONTAINERS SUCH AS COLUMNS. TANK, ENGINES, COMPRESSORS, SWITCH GEAR. LINES AND MOBIL EQUIPMENT. TO INCLUDE ALL CATEGORIES OF LINES WOULD BE IMPRACTICAL. HOWEVER, ALL LINES WILL BE PREPARED ACCORDING TO THE PROCEDURE OUTLINED IN THIS MANUAL.

II. HAZARDOUS WORK PERMIT PROCEDURE

1. PURPOSE:

THE PURPOSE OF THE HAZARDOUS WORK PERMIT PROCEDURE IS:

- A. TO CONTROL PHYSICAL ENTRY INTO CONFINED SPACES.
- B. TO CONTROL THE USE OF OPEN FLAME OR OTHER POTENTIAL IGNITION SOURCES.
- C. TO PROVIDE INSTRUCTIONS AND PRECAUTIONS WHEN THE NATURE OF THE WORK COULD RESULT IN INJURY TO PERSONNEL OR EXPOSURE TO TOXIC MATERIALS.

2. APPLICATION:

A PROPERLY EXECUTED HAZARDOUS WORK PERMIT IS REQUIRED FOR:

2. APPLICATION: (CONT'D)

A. PHYSICAL ENTRY INTO CONFINED SPACES.

1. PHYSICAL ENTRY IS DEFINED AS:

A. THE INTRODUCTION OF THE ENTIRE PERSON INTO
A VESSEL OR EQUIPMENT

OR

B. THE INSERTION OF ANY PORTION OF THE BODY INTO
A VESSEL OR EQUIPMENT WHERE THERE IS ANY
POSSIBILITY OF INJURY.

2. CONFINED SPACES IS DEFINED AS:

A. AN ENCLOSURE WITH A LIMITED ACCESS OPENING
FOR PERSONNEL SUCH AS CLOSED STORAGE TANKS,
TANK CARS, BARGES, PROCESS EQUIPMENT, ETC.

B. SPACES WITH LARGE OPENINGS SO CONGESTED OR
DEEP AS TO REQUIRE THE ASSISTANCE OF OTHERS
IN CASE OF EMERGENCY.

C. SPACES SUCH AS ELECTRICAL MANHOLES, SEWER
MANHOLES AND PITS, EQUIPMENT SKIRTS,
EXCAVATIONS FOUR (4) FEET DEEP OR MORE,
UNDERGROUND UTILITY LINES OR PIPE TUNNELS.

2. APPLICATION: (CONT'D)

B. POTENTIAL IGNITION SOURCES

1. OPEN FLAME OF ANY KIND, WELDING, CUTTING, TAR POT, HALOGEN TESTING EQUIPMENT.
2. SPARK OR HEAT PRODUCING TOOLS, SUCH AS GRINDERS, CHIPPING HAMMERS, PIPE THREADING MACHINES, SOLDERING IRONS, ELECTRIC DRILL MOTORS, WELDING MACHINES AND DRILL BITS.
3. TESTING EQUIPMENT, AUDIOGAGE, REFLECTOSCOPE, CAMERA, ETC.,

EXCEPTION: KRAUTKRAMER "D" ULTRA SONIC THICKNESS TESTER.

C. OTHER HAZARDS

1. OPENING PROCESS VESSELS. INSTALLING SLIPBLINDS BETWEEN THE VESSEL AND THE FIRST BLOCK VALVE, REMOVING MANWAYS, CALANDRIA HEADS, ETC.
2. OPENING OF PROCESS PIPING WHEN IT IS NOT KNOWN THAT THE PIPING IS CLEAN AND VENTED. INCLUDED IN PROCESS PIPING ARE STEAM AND CONDENSATE.

2. APPLICATION: (CONT'D)

C. OTHER HAZARDS (CONT'D)

3. OPERATING CRANES AND WINCH TRUCKS NEAR ELECTRIC POWER LINES.
4. EXCAVATIONS, DIGGING, TRENCHING, DITCHING. THE USE OF HAND SHOVEL IS AN EXCEPTION OF THE EXCAVATION IS LESS THAN FOUR (4) FEET DEEP.
5. OTHER HAZARDS. WHEN THERE IS A CHANCE THAT MATERIALS THAT MAY INJURE OR CAUSE UNNECESSARY PERSONNEL EXPOSURE MAY BE PRESENT, WHEN HEIGHT OR FALLING OBJECTS MAY CREATE A HAZARD.

3. RESPONSIBILITIES:

A. SITE MANAGER

THE SITE MANAGER OR HER DESIGNATE IS RESPONSIBLE FOR SPECIFYING THE PRECAUTIONS TO BE TAKEN IN THE PERFORMANCE OF HAZARDOUS WORK.

III. CONFINED SPACES - ENTRY OR WORK

1. PURPOSE

TO INSURE THE SAFETY OF PERSONNEL WHEN ENTERING OR WORKING IN CONFINED SPACES.

III. ... CONFINED SPACES - ENTRY OR WORK (CONT'D)

2. DEFINITIONS

ENTRY IS DEFINED AS:

- A. THE INTRODUCTION OF THE ENTIRE PERSON INTO A VESSEL OR EQUIPMENT.

OR

- B. THE INSERTION OF ANY PORTION OF THE BODY INTO A VESSEL OR EQUIPMENT WHERE THERE IS ANY POSSIBILITY OF INJURY.

INITIAL ENTRY IS DEFINED AS:

THE FIRST PERSON TO ENTER THE CONFINED SPACE TO CONDUCT THE REQUIRED TESTS OR TO DO THE WORK.

CONFINED SPACE IS DEFINED AS BUT NOT LIMITED TO:

- A. AN ENCLOSURE WITH A LIMITED ACCESS OPENING FOR PERSONNEL SUCH AS CLOSED STORAGE TANKS, TANK CARS, BARGES, PROCESS EQUIPMENT, ETC.
- B. SPACES WITH LARGE OPENINGS SO CONGESTED OR DEEP AS TO REQUIRE THE ASSISTANCE OF OTHERS IN CASE OF EMERGENCY.
- C. SPACES SUCH AS ELECTRICAL MANHOLES, SEWER MANHOLES, AND PITS, EQUIPMENT SKIRTS, EXCAVATIONS FOUR (4) FEET DEEP OR MORE, UNDERGROUND UTILITY LINES OR PIPE TUNNELS.

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

3. PROCEDURE

THE CONTROLS AND PRECAUTIONS AS INDICATED ON AN AUTHORIZED HAZARDOUS WORK PERMIT WILL BE ADHERED TO.

A. GAS FREE SPACES

1. "GAS FREE" IS DEFINED AS A SPACE MEETING THE FOLLOWING CONDITIONS:

- A. ATMOSPHERE HAVING SUFFICIENT OXYGEN FOR BREATHING: NOT LESS THAN 19.5% OXYGEN CONTENT NOR MORE THAN 22%.
- B. L.E.L. TEST OF 0.0% - (EXPLOSIMETERS TEST).
- C. AN APPROPRIATE TOXICITY TEST TO MEET ACCEPTABLE T.L.V. STANDARDS WHERE APPLICABLE.

2. BEFORE INITIAL ENTRY IS MADE, THE FOLLOWING CONDITIONS MUST BE SATISFIED:

- A. PERSON(S) MAKING INITIAL ENTRY WILL BE EQUIPPED WITH SAFETY HARNESS, LIFE LINES AND FRESH AIR MASK.
- B. THE CONFINED SPACE WILL BE VENTILATED BY A BLOWER OR AIR HORN. EQUIPMENT WILL BE COOLED TO 110 F PRIOR TO ENTRY.

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

3. PROCEDURE (CONT'D)

A. GAS FREE SPACES (CONT'D)

C. THE FOLLOWING ITEMS WILL BE MINIMUM STANDBY SAFETY EQUIPMENT AVAILABLE AT THE ENTRY POINT FOR RESCUE WORK:

1. SAFETY HARNESS AND LIFE LINE. (1)
2. FRESH AIR BREATHING EQUIPMENT. (1)
3. FALCON AIR HORN. (1)

D. A STANDBY PERSON OR PERSONS WILL BE STATIONED OUTSIDE THE CONFINED SPACE POINT OF ENTRY. UNDER NO CIRCUMSTANCES WILL THE STANDBY LEAVE THE ASSIGNED STATION AS LONG AS CONFINED SPACE WORK IS IN PROGRESS. (EXCEPTIONS: TO OBTAIN EMERGENCY ASSISTANCE OR WHEN RELIEVED BY A REPLACEMENT.)

3. WHEN ENTRY IS MADE, AND SECTION III A.1. OF THIS PROCEDURE IS SATISFIED, SAFETY HARNESS AND LIFE LINE CAN BE REMOVED FROM PERSON(S) INSIDE THE CONFINED SPACE AT THE DIRECTION OF THE DEPARTMENT HEAD OR A DESIGNATED REPRESENTATIVE.
4. IF CONDITIONS SO WARRANT, ADDITIONAL PRECAUTIONS DEEMED NECESSARY BY THE SITE MANAGER OR A DESIGNATED REPRESENTATIVE WILL BE TAKEN.

IV. BASIC SAFETY EQUIPMENT

1. OSHA APPROVED SCAFFOLD AND WORK PLATFORMS SUFFICIENT TO ASSURE ACCESS TO WORK AREA AND FIRM FOOTING FOR WORKERS.
2. PROTECTIVE CLOTHING SUCH AS RAIN SUITS OR TYVEC SUITS TO BE AVAILABLE AS NEEDED.
3. RUBBER BOOTS TO BE AVAILABLE AS NEEDED.
4. GLOVES, BOTH PROTECTIVE AND CHEMICAL RESISTANT.
5. COVERALL GOGGLES
6. HARD HATS
7. SAFETY GLASSES
8. BREATHING AIR EQUIPMENT FOR WORKERS IN THE CONFINED SPACES PLUS ANOTHER FULL SET FOR THE OUTSIDE HOLE WATCH.
9. LIFE LINE AND SAFETY BELT OR HARNESS FOR WORKERS IN THE CONFINED SPACE PLUS ANOTHER SET FOR THE OUTSIDE HOLE WATCH.
10. 12 VOLT LIGHTING IF LIGHTING IS REQUIRED INSIDE THE CONFINED SPACE AREA.
11. FALCON AIR HORN FOR EMERGENCY SIGNAL TO BE AVAILABLE TO THE OUTSIDE HOLE WATCH.
12. PROPERLY CALIBRATED HYDROCARBON TEST ANALYZER IN GOOD WORKING ORDER.
13. PROPERLY CALIBRATED OXYGEN TEST ANALYZER IN GOOD WORKING ORDER.

Union Carbide Brownsville ~~Plant~~ TEXAS - Plant Safety Rules.
SUBJECT: PLANT SAFETY RULES

I. PURPOSE:

To provide safety controls that will minimize personal injury and prevent damage to equipment. The rules apply to ALL personnel assigned to jobs in the plant.

II. POLICY:

It is impossible to list every hazard which might be encountered in an industrial plant. Therefore, safety restrictions are not limited to just the rules stated below. All employees must follow the safe practices or procedures given in written or oral job instructions. All safety requirements specified and ~~published by the Employee's Department~~ must be observed.

Management requires all employees to use good judgment in the safe execution of their jobs. Violation of safety rules or failure to follow accepted safe practices or procedures will be cause for disciplinary action.

When ~~secondary~~ contractors or vendors are brought into the plant, it will be the responsibility of the ~~Secondary Maintenance Contractor~~ ^{Project Manager} Coordinator or his designate to inform them of the general plant safety rules and regulations that are applicable to our plant operation. The ~~Secondary Maintenance Contractor~~ ^{Project Manager} Coordinator or his designate will be accountable for issuing the prepared written copies of general plant safety instructions to the contractors or vendors and their employees. Each and every time a vendor or contractor enters the plant gate, the plant guard shall stop the individual and ask that all matches or cigarette lighters be left at the gate. ~~Contractors and vendors~~ ^{Project Manager} must always report incidents or accidents to the person responsible for

And to provide the individuals with hard hats and safety glasses.

SUBJECT: PLANT SAFETY RULES

2.

II. POLICY: (Continued)

bringing them in the plant. For instance, all fires, injuries, hazardous incidents, or potentially hazardous incidents must be reported. *Project manager will advise a report to the site manager as soon as the incident has been taken care of. All work will be stopped until the report is turned in.*

III. RULES: GENERAL

1. Matches or cigarette lighters are not allowed in the plant.
2. Smoking in the plant is prohibited. Violators are subject to immediate discharge. For purposes of this policy, Building #259, is not construed to be in the plant.
3. Clarity and speed of all communications are vital to the safe and efficient operation of the plant. It is in this interest that only English be utilized in oral and written communications during working hours.
4. Horseplay in the plant will not be tolerated.
5. The maximum plant speed limit is 20 MPH. In congested areas the speed limit is reduced to 5 - 15 MPH. Stop, warning or restriction, and safety signs will be followed.
6. Do not get off moving vehicles at any time. Riding on running boards, or having any part of the body extending outside truck bed is strictly forbidden. All riders must be seated.
7. ~~Operation of internal combustion engines, use of spark producing tools, welding, cutting, or the use of any tool or machine which might, through its operation produce a spark or flame, will not be permitted within the operating areas without specific approval of the operating personnel (any require properly executed HWP).~~
The work done by the secondary contractor or vendor will be subject

SUBJECT: PLANT SAFETY RULES

3.

III. RULES: GENERAL (Continued)

7. (Continued)

to the restrictions on the Hazardous Work Permit, and no changes will be allowed unless the permit is rewritten. The Hazardous Work Permit must remain posted at the job site throughout the duration of the work covered by the permit.

8. Report all injuries immediately.

9. Secondary contractors and vendors shall check with the guard at the main gate before entering or leaving the plant.

10. In addition to the above requirements, secondary contractors and their personnel shall be responsible for any particular requirements so specified within their work contract.

11. Drinking, or the possession of liquor or habit-forming drugs is prohibited on plant property. No one under their influence will be allowed to work.

12. Prohibited weapons, as defined by the Texas Penal Code, are not allowed in the plant.

4 FEET OR MORE ABOVE GROUND NOT
4.13 Safety belts shall be worn when working from an area $\wedge$ having proper guard railings & platform. Safety belts are not to be altered to size or length. Lanyards are to be secured to a sound structure in case of a fall. (Not to scaffolding) ~~or~~
4.14. No employee shall stand on the top step of any stepladder, nor shall one straddle a step ladder with one foot on each run. Wooden ladders are to be used only by electricians. No one wearing a face shield or welding hood shall work from any ladder.

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~~of this policy. employees will not be required to wear safety glasses when reporting to or leaving from work. Contact lens will not be worn in the plant. Special goggles provided must be worn where called for in instructions, written or oral.~~

2. Hard hats must be worn at all times ~~while you are in the plant,~~ except in offices, and when reporting to or leaving from work.

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4.

SUBJECT: PLANT SAFETY RULES

IV. SAFETY EQUIPMENT: (Continued)

3. Employees are encouraged to wear safety shoes. Employees who choose not to wear safety shoes shall wear shoes that comply with the following:
 - a. Shoes shall have a flexible sole.
 - b. Shoes shall have a heel height not to exceed 3" measured vertically from inside the heel.
 - c. Material of construction for shoes worn when working in the ~~laboratory and in Manufacturing areas~~ of the plant shall be leather or man-made material that provides equal protection.
 - d. Moccasins, open toe shoes or canvas sneakers shall not be worn when working in the ~~laboratory and manufacturing areas~~ of the plant.
4. Do not wear loose clothing around moving machinery. Shirts with sleeves (minimum length, standard short or half) will be worn at all times while in the plant. *MUSCLE SHIRTS, OR GOING WITHOUT A SHIRT WILL NOT BE PERMITTED IN THE PLANT.*
5. Hearing protection must be worn at all times if you work in areas specified as noise areas.

EXHIBIT A

1. PREPARATION OF EQUIPMENT FOR MAINTENANCE

1. INTRODUCTION:

THIS SECTION DEALS WITH THE RESPONSIBILITIES AND PROCEDURES FOR PREPARING EQUIPMENT FOR MAINTENANCE. THIS INCLUDES SUCH EQUIPMENT AS COLUMNS, TANKS, ENGINES, COMPRESSORS, LINES, SWITCH GEAR AND MOBILE EQUIPMENT.

THE PROCEDURE AS PRESENTED IS THE BASIC MINIMUM REQUIREMENT AND SHALL BE FOLLOWED THROUGHOUT THE BROWNSVILLE PLANT. NO DEVIATIONS ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE PLANT MANAGER'S DEPARTMENT.

2. GENERAL

PREPARING VESSELS OR EQUIPMENT FOR OPENING AND ENTRY OR HAZARDOUS WORK MEANS TO DO ANY OR ALL OF THE FOLLOWING TO MAKE THE WORK SAFE:

- A. EMPTY OF ANY HAZARDOUS LIQUID.
- B. VENT
- C. PURGE
- D. BLIND OR DISCONNECT
- E. TREAT FOR ACETYLIDES
- F. STEAM
- G. WASH
- H. COOL
- I. VENTILATE
- J. TEST FOR HAZARDOUS GASES
- K. CHECK FOR SPECIAL REQUIREMENTS
- L. TEST FOR OXYGEN CONTENT

EXHIBIT A

2. GENERAL (CONT'D)

VESSELS AND EQUIPMENT AS USED HERE INCLUDE CONTAINERS AS COLUMNS, TANK, ENGINES, COMPRESSORS, SWITCH GEAR, LINES AND MOBIL EQUIPMENT. TO INCLUDE ALL CATEGORIES OF LINES WOULD BE IMPRACTICAL. HOWEVER, ALL LINES WILL BE PREPARED ACCORDING TO THE PROCEDURE OUTLINED IN THIS MANUAL.

II. HAZARDOUS WORK PERMIT PROCEDURE1. PURPOSE:

THE PURPOSE OF THE HAZARDOUS WORK PERMIT PROCEDURE IS:

- A. TO CONTROL PHYSICAL ENTRY INTO CONFINED SPACES.
- B. TO CONTROL THE USE OF OPEN FLAME OR OTHER POTENTIAL IGNITION SOURCES IN RESTRICTED AREAS OF THE PLANT.
- C. TO PROVIDE INSTRUCTIONS AND PRECAUTIONS WHEN THE NATURE OF THE WORK COULD RESULT IN INJURY TO PERSONNEL OR EXPOSURE TO TOXIC MATERIALS.

2. APPLICATION:

A PROPERLY EXECUTED HAZARDOUS WORK PERMIT IS REQUIRED FOR:

A. PHYSICAL ENTRY INTO CONFINED SPACES.

1. PHYSICAL ENTRY IS DEFINED AS:

- A. THE INTRODUCTION OF THE ENTIRE PERSON INTO A VESSEL OR EQUIPMENT

OR

- B. THE INSERTION OF ANY PORTION OF THE BODY INTO A VESSEL OR EQUIPMENT WHERE THERE IS ANY POSSIBILITY OF INJURY.

EXHIBIT A

II. HAZARDOUS WORK PERMIT PROCEDURE (CONT'D)

2. APPLICATION: (CONT'D)

2. CONFINED SPACES IS DEFINED AS:

- A. AN ENCLOSURE WITH A LIMITED ACCESS OPENING FOR PERSONNEL
SUCH AS CLOSED STORAGE TANKS, TANK CARS, BARGES, PROCESS
EQUIPMENT, ETC.
- B. SPACES WITH LARGE OPENINGS SO CONGESTED OR DEEP AS TO
REQUIRE THE ASSISTANCE OF OTHERS IN CASE OF EMERGENCY.
- C. SPACES SUCH AS ELECTRICAL MANHOLES, SEWER MANHOLES AND
PITS, EQUIPMENT SKIRTS, EXCAVATIONS FOUR (4) FEET DEEP
OR MORE, UNDERGROUND UTILITY LINES OR PIPE TUNNELS.

B. POTENTIAL IGNITION SOURCES

- 1. OPEN FLAME OF ANY KIND, WELDING, CUTTING, TAR POT, HALOGEN
TESTING EQUIPMENT.
- 2. SPARK OR HEAT PRODUCING TOOLS, SUCH AS GRINDERS, CHIPPING
HAMMERS, PIPE THREADING MACHINES, SOLDERING IRONS, ELECTRIC
DRILL MOTORS, WELDING MACHINES AND DRILL BITS.
- 3. TESTING EQUIPMENT, AUDIOGAGE, REFLECTOSCOPE, CAMERA, ETC.,
EXCEPTION: KRAUTKRAMER "D" ULTRA SONIC THICKNESS TESTER.

C. OTHER HAZARDS

- 1. OPENING PROCESS VESSELS. INSTALLING SLIPBLINDS BETWEEN THE
THE VESSEL AND THE FIRST BLOCK VALVE, REMOVING MANWAYS,
CALANDRIA HEADS, ETC.

EXHIBIT A

II. HAZARDOUS WORK PERMIT PROCEDURE (CONT'D)

2. APPLICATION: (CONT'D)

C. OTHER HAZARDS (CONT'D)

2. OPENING OF PROCESS PIPING WHEN IT IS NOT KNOWN THAT THE PIPING IS CLEAN AND VENTED. INCLUDED IN PROCESS PIPING ARE STEAM AND CONDENSATE.
3. OPERATING CRANES AND WINCH TRUCKS NEAR ELECTRIC POWER LINES.
4. EXCAVATIONS, DIGGING, TRENCHING, DITCHING. THE USE OF HAND SHOVEL IS AN EXCEPTION OF THE EXCAVATION IS LESS THAN FOUR (4) FEET DEEP.
5. OTHER HAZARDS. WHEN THERE IS A CHANCE THAT MATERIALS THAT MAY INJURE OR CAUSE UNNECESSARY PERSONNEL EXPOSURE MAY BE PRESENT, WHEN HEIGHT OR FALLING OBJECTS MAY CREATE A HAZARD.

3. RESPONSIBILITIES:

A. OPERATING DEPARTMENT HEAD

THE OPERATING DEPARTMENT HEAD OR HIS DESIGNATE IS RESPONSIBLE FOR SPECIFYING THE PRECAUTIONS TO BE TAKEN IN THE PERFORMANCE OF HAZARDOUS WORK.

III. CONFINED SPACES - ENTRY OR WORK

1. PURPOSE

TO INSURE THE SAFETY OF PERSONNEL WHEN ENTERING OR WORKING IN CONFINED SPACES.

EXHIBIT A

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

2. DEFINITIONS

ENTRY IS DEFINED AS:

A. THE INTRODUCTION OF THE ENTIRE PERSON INTO A VESSEL OR EQUIPMENT.

OR

B. THE INSERTION OF ANY PORTION OF THE BODY INTO A VESSEL OR EQUIPMENT WHERE THERE IS ANY POSSIBILITY OF INJURY.

INITIAL ENTRY IS DEFINED AS:

THE FIRST PERSON TO ENTER THE CONFINED SPACE TO CONDUCT THE REQUIRED TESTS OR TO DO THE WORK.

CONFINED SPACE IS DEFINED AS BUT NOT LIMITED TO:

- A. AN ENCLOSURE WITH A LIMITED ACCESS OPENING FOR PERSONNEL SUCH AS CLOSED STORAGE TANKS, TANK CARS, BARGES, PROCESS EQUIPMENT, ETC.
- B. SPACES WITH LARGE OPENINGS SO CONGESTED OR DEEP AS TO REQUIRE THE ASSISTANCE OF OTHERS IN CASE OF EMERGENCY.
- C. SPACES SUCH AS ELECTRICAL MANHOLES, SEWER MANHOLES, AND PITS, EQUIPMENT SKIRTS, EXCAVATIONS FOUR (4) FEET DEEP OR MORE, UNDERGROUND UTILITY LINES OR PIPE TUNNELS.

3. PROCEDURE

THE CONTROLS AND PRECAUTIONS AS INDICATED ON AN AUTHORIZED HAZARDOUS WORK PERMIT WILL BE ADHERED TO.

A. GAS FREE SPACES

1. "GAS FREE" IS DEFINED AS A SPACE MEETING THE FOLLOWING CONDITIONS:

- A. ATMOSPHERE HAVING SUFFICIENT OXYGEN FOR BREATHING; NOT LESS THAN 19.5% OXYGEN CONTENT NOR MORE THAN 22%.

EXHIBIT A

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

3. PROCEDURE (CONT'D)

A. GAS FREE SPACES (CONT'D)

1. "GAS FREE" IS DEFINED AS A SPACE MEETING THE FOLLOWING

CONDITIONS: (CONT'D)

B. L.E.L. TEST OF 0.0% - (EXPLOSIMETERS TEST).

C. AN APPROPRIATE TOXICITY TEST TO MEET ACCEPTABLE T.L.V.

STANDARDS WHERE APPLICABLE.

2. BEFORE INITIAL ENTRY IS MADE, THE FOLLOWING CONDITIONS

MUST BE SATISFIED:

A. PERSON(S) MAKING INITIAL ENTRY WILL BE EQUIPED WITH SAFETY HARNESS, LIFE LINES AND FRESH AIR MASK.

B. THE CONFINED SPACE WILL BE VENTILATED BY A BLOWER OR AIR HORN. EQUIPMENT WILL BE COOLED TO 110°F PRIOR TO ENTRY.

C. THE FOLLOWING ITEMS WILL BE MINIMUM STANDBY SAFETY EQUIPMENT AVAILABLE AT THE ENTRY POINT FOR RESCUE WORK:

1. SAFETY HARNESS AND LIFE LINE. (1)

2. FRESH AIR BREATHING EQUIPMENT. (1)

3. FALCON AIR HORN. (1)

D. A STANDBY PERSON OR PERSONS WILL BE STATIONED OUTSIDE THE CONFINED SPACE POINT OF ENTRY. UNDER NO CIRCUMSTANCES WILL THE STANDBY LEAVE THE ASSIGNED STATION AS LONG AS CONFINED SPACE WORK IS IN PROGRESS. (EXCEPTIONS: TO OBTAIN EMERGENCY ASSISTANCE OR WHEN RELIEVED BY A REPLACEMENT.)

EXHIBIT A

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

3. PROCEDURE (CONT')

A. GAS FREE SPACES (CONT'D)

3. WHEN ENTRY IS MADE, AND SECTION III A.1. OF THIS PROCEDURE IS SATISFIED, SAFETY HARNESS AND LIFE LINE CAN BE REMOVED FROM PERSON(S) INSIDE THE CONFINED SPACE AT THE DIRECTION OF THE DEPARTMENT HEAD OR A DESIGNATED REPRESENTATIVE.
4. IF CONDITIONS SO WARRANT, ADDITIONAL PRECAUTIONS DEEMED NECESSARY BY THE DEPARTMENT HEAD OR A DESIGNATED REPRESENTATIVE WILL BE TAKEN.

IV. BASIC SAFETY EQUIPMENT

1. OSHA APPROVED SCAFFOLD AND WORK PLATFORMS SUFFICIENT TO ASSURE ACCESS TO WORK AREA AND FIRM FOOTING FOR WORKERS.
2. PROTECTIVE CLOTHING SUCH AS RAIN SUITS OR TYVEC SUITS TO BE AVAILABLE AS NEEDED.
3. RUBBER BOOTS TO BE AVAILABLE AS NEEDED.
4. GLOVES, BOTH PROTECTIVE AND CHEMICAL RESISTANT.
5. COVERALL GOGGLES
6. HARD HATS
7. SAFETY GLASSES
8. BREATHING AIR EQUIPMENT FOR WORKERS IN THE CONFINED SPACES PLUS ANOTHER FULL SET FOR THE OUTSIDE HOLE WATCH.
9. LIFE LINE AND SAFETY BELT OR HARNESS FOR WORKERS IN THE CONFINED SPACE PLUS ANOTHER SET FOR THE OUTSIDE HOLE WATCH.
10. 12 VOLT LIGHTING IF LIGHTING IS REQUIRED INSIDE THE CONFINED SPACE AREA.
11. FALCON AIR HORN FOR EMERGENCY SIGNAL TO BE AVAILABLE TO THE OUTSIDE HOLE WATCH.
12. PROPERLY CALIBRATED HYDROCARBON TEST ANALYZER IN GOOD WORKING ORDER.
13. PROPERLY CALIBRATED OXYGEN TEST ANALYZER IN GOOD WORKING ORDER.

DE 000352

EXHIBIT A

1. PREPARATION OF EQUIPMENT FOR MAINTENANCE

1. INTRODUCTION:

THIS SECTION DEALS WITH THE RESPONSIBILITIES AND PROCEDURES FOR PREPARING EQUIPMENT FOR MAINTENANCE. THIS INCLUDES SUCH EQUIPMENT AS COLUMNS, TANKS, ENGINES, COMPRESSORS, LINES, SWITCH GEAR AND MOBILE EQUIPMENT.

THE PROCEDURE AS PRESENTED IS THE BASIC MINIMUM REQUIREMENT AND SHALL BE FOLLOWED THROUGHOUT THE BROWNSVILLE PLANT. NO DEVIATIONS ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE PLANT MANAGER ~~OR SUPERVISOR~~.

2. GENERAL

PREPARING VESSELS OR EQUIPMENT FOR OPENING AND ENTRY OR HAZARDOUS WORK MEANS TO DO ANY OR ALL OF THE FOLLOWING TO MAKE THE WORK SAFE:

- A. EMPTY OF ANY HAZARDOUS LIQUID.
- B. VENT
- C. PURGE
- D. BLIND OR DISCONNECT
- ~~E. TREAT FOR ACETILIDES~~
- ~~F. STEAM~~
- E. G. WASH
- F. H. COOL
- G. I. VENTILATE
- H. J. TEST FOR HAZARDOUS GASES
- I. K. CHECK FOR SPECIAL REQUIREMENTS
- J. L. TEST FOR OXYGEN CONTENT

EXHIBIT A

GENERAL (CONT'D)

VESSLS AND EQUIPMENT AS USED HERE INCLUDE CONTAINERS, ^{SUCH} AS COLUMNS, TANKS, ENGINES, COMPRESSORS, SWITCH GEAR, LINES AND MOBIL EQUIPMENT. TO INCLUDE ALL CATEGORIES OF LINES WOULD BE IMPRACTICAL. HOWEVER, ALL LINES WILL BE PREPARED ACCORDING TO THE PROCEDURE OUTLINED IN THIS MANUAL.

II. HAZARDOUS WORK PERMIT PROCEDURE

1. PURPOSE:

THE PURPOSE OF THE HAZARDOUS WORK PERMIT PROCEDURE IS:

- A. TO CONTROL PHYSICAL ENTRY INTO CONFINED SPACES.
- B. TO CONTROL THE USE OF OPEN FLAME OR OTHER POTENTIAL IGNITION SOURCES ~~IN RESTRICTED AREAS OF THE PLANT.~~
- C. TO PROVIDE INSTRUCTIONS AND PRECAUTIONS WHEN THE NATURE OF THE WORK COULD RESULT IN INJURY TO PERSONNEL OR EXPOSURE TO TOXIC MATERIALS.

2. APPLICATION:

A PROPERLY EXECUTED HAZARDOUS WORK PERMIT IS REQUIRED FOR:

A. PHYSICAL ENTRY INTO CONFINED SPACES.

1. PHYSICAL ENTRY IS DEFINED AS:

- A. THE INTRODUCTION OF THE ENTIRE PERSON INTO A VESSEL OR EQUIPMENT

OR

- B. THE INSERTION OF ANY PORTION OF THE BODY INTO A VESSEL OR EQUIPMENT WHERE THERE IS ANY POSSIBILITY OF INJURY.

~~75-3~~ 7.

EXHIBIT A

11. HAZARDOUS WORK PERMIT PROCEDURE (CONT'D)

2. APPLICATION: (CONT'D)

2. CONFINED SPACES IS DEFINED AS:

- A. AN ENCLOSURE WITH A LIMITED ACCESS OPENING FOR PERSONNEL SUCH AS CLOSED STORAGE TANKS, TANK CARS, BARGES, PROCESS EQUIPMENT, ETC.
- B. SPACES WITH LARGE OPENINGS SO CONGESTED OR DEEP AS TO REQUIRE THE ASSISTANCE OF OTHERS IN CASE OF EMERGENCY.
- C. SPACES SUCH AS ELECTRICAL MANHOLES, SEWER MANHOLES AND PITS, EQUIPMENT SKIRTS, EXCAVATIONS FOUR (4) FEET DEEP OR MORE, UNDERGROUND UTILITY LINES OR PIPE TUNNELS.

B. POTENTIAL IGNITION SOURCES

- 1. OPEN FLAME OF ANY KIND, WELDING, CUTTING, TAR POT, HALOGEN TESTING EQUIPMENT.
- 2. SPARK OR HEAT PRODUCING TOOLS, SUCH AS GRINDERS, CHIPPING HAMMERS, PIPE THREADING MACHINES, SOLDERING IRONS, ELECTRIC DRILL MOTORS, WELDING MACHINES AND DRILL BITS.
- 3. TESTING EQUIPMENT, AUDIOGAGE, REFLECTOSCOPE, CAMERA, ETC.,
EXCEPTION: KRAUTKRAMER "D" ULTRA SONIC THICKNESS TESTER.

C. OTHER HAZARDS

- 1. OPENING PROCESS VESSELS. INSTALLING SLIPBLINDS BETWEEN THE THE VESSEL AND THE FIRST BLOCK VALVE, REMOVING MANWAYS, CALANDRIA HEADS, ETC.

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8.

EXHIBIT A

II. HAZARDOUS WORK PERMIT PROCEDURE (CONT'D)

2. APPLICATION: (CONT'D)

C. OTHER HAZARDS (CONT'D)

2. OPENING OF PROCESS PIPING WHEN IT IS NOT KNOWN THAT THE PIPING IS CLEAN AND VENTED. INCLUDED IN PROCESS PIPING ARE STEAM AND CONDENSATE.
3. OPERATING CRANES AND WINCH TRUCKS NEAR ELECTRIC POWER LINES.
4. EXCAVATIONS, DIGGING, TRENCHING, DITCHING. THE USE OF HAND SHOVEL IS AN EXCEPTION OF THE EXCAVATION IS LESS THAN FOUR (4) FEET DEEP.
5. OTHER HAZARDS. WHEN THERE IS A CHANCE THAT MATERIALS THAT MAY INJURE OR CAUSE UNNECESSARY PERSONNEL EXPOSURE MAY BE PRESENT, WHEN HEIGHT OR FALLING OBJECTS MAY CREATE A HAZARD.

3. RESPONSIBILITIES:

- A. OPERATING DEPARTMENT HEAD SITE MANAGER
SITE MANAGER NEA
THE ~~OPERATING DEPARTMENT HEAD~~ OR HIS DESIGNATE IS RESPONSIBLE FOR SPECIFYING THE PRECAUTIONS TO BE TAKEN IN THE PERFORMANCE OF HAZARDOUS WORK.

III. CONFINED SPACES - ENTRY OR WORK

1. PURPOSE

TO INSURE THE SAFETY OF PERSONNEL WHEN ENTERING OR WORKING IN CONFINED SPACES.

EXHIBIT A

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

2. DEFINITIONS

ENTRY IS DEFINED AS:

A. THE INTRODUCTION OF THE ENTIRE PERSON INTO A VESSEL OR EQUIPMENT.

OR

B. THE INSERTION OF ANY PORTION OF THE BODY INTO A VESSEL OR EQUIPMENT WHERE THERE IS ANY POSSIBILITY OF INJURY.

INITIAL ENTRY IS DEFINED AS:

THE FIRST PERSON TO ENTER THE CONFINED SPACE TO CONDUCT THE REQUIRED TESTS OR TO DO THE WORK.

CONFINED SPACE IS DEFINED AS BUT NOT LIMITED TO:

- A. AN ENCLOSURE WITH A LIMITED ACCESS OPENING FOR PERSONNEL SUCH AS CLOSED STORAGE TANKS, TANK CARS, BARGES, PROCESS EQUIPMENT, ETC.
- B. SPACES WITH LARGE OPENINGS SO CONGESTED OR DEEP AS TO REQUIRE THE ASSISTANCE OF OTHERS IN CASE OF EMERGENCY.
- C. SPACES SUCH AS ELECTRICAL MANHOLES, SEWER MANHOLES, AND PITS, EQUIPMENT SKIRTS, EXCAVATIONS FOUR (4) FEET DEEP OR MORE, UNDERGROUND UTILITY LINES OR PIPE TUNNELS.

3. PROCEDURE

THE CONTROLS AND PRECAUTIONS AS INDICATED ON AN AUTHORIZED HAZARDOUS WORK PERMIT WILL BE ADHERED TO.

A. GAS FREE SPACES

1. "GAS FREE" IS DEFINED AS A SPACE MEETING THE FOLLOWING CONDITIONS:

- A. ATMOSPHERE HAVING SUFFICIENT OXYGEN FOR BREATHING, NOT LESS THAN 19.5% OXYGEN CONTENT NOR MORE THAN 22%.

EXHIBIT A

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

3. PROCEDURE (CONT'D)

A. GAS FREE SPACES (CONT'D)

1. "GAS FREE" IS DEFINED AS A SPACE MEETING THE FOLLOWING
CONDITIONS: (CONT'D)

- B. L.E.L. TEST OF 0.0% - (EXPLOMETERS TEST).
- C. AN APPROPRIATE TOXICITY TEST TO MEET ACCEPTABLE T.L.V.
STANDARDS WHERE APPLICABLE.

2. BEFORE INITIAL ENTRY IS MADE, THE FOLLOWING CONDITIONS
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- B. THE CONFINED SPACE WILL BE VENTILATED BY A BLOWER OR AIR
HORN. EQUIPMENT WILL BE COOLED TO 110°F PRIOR TO ENTRY.
- C. THE FOLLOWING ITEMS WILL BE MINIMUM STANDBY SAFETY EQUIPMENT
AVAILABLE AT THE ENTRY POINT FOR RESCUE WORK:
 - 1. SAFETY HARNES AND LIFE LINE. (1)
 - 2. FRESH AIR BREATHING EQUIPMENT. (1)
 - 3. FALCON AIR HORN. (1)
- D. A STANDBY PERSON OR PERSONS WILL BE STATIONED OUTSIDE THE
CONFINED SPACE POINT OF ENTRY. UNDER NO CIRCUMSTANCES WILL
THE STANDBY LEAVE THE ASSIGNED STATION AS LONG AS CONFINED
SPACE WORK IS IN PROGRESS. (EXCEPTIONS: TO OBTAIN EMERGENCY
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11.
Pg 7
EXHIBIT A

III. CONFINED SPACES - ENTRY OR WORK (CONT'D)

3. PROCEDURE (CONT')

A. GAS FREE SPACES (CONT'D)

3. WHEN ENTRY IS MADE, AND SECTION III A.1. OF THIS PROCEDURE IS SATISFIED, SAFETY HARNESS AND LIFE LINE CAN BE REMOVED FROM PERSON(S) INSIDE THE CONFINED SPACE AT THE DIRECTION OF THE DEPARTMENT HEAD OR A DESIGNATED REPRESENTATIVE.
4. IF CONDITIONS SO WARRANT, ADDITIONAL PRECAUTIONS DEEMED ^{SITE MANAGER} NECESSARY BY THE ~~DEPARTMENT HEAD~~ OR A DESIGNATED REPRESENTATIVE WILL BE TAKEN.

IV. BASIC SAFETY EQUIPMENT

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SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

222 Cavalcade St. • P.O. Box 6768, Houston, Texas 77249 • 713/692-9151

Client Union Carbide Corporation
Belia Cortez
Star Rt. Box 90
Brownsville, Texas 78521

Client No.
Report No. 89-11-374
Report Date 12/4/89

Project Bulk samples submitted for asbestos content analysis. Received from SWL-Los Fresnos at SWL-Houston on November 30, 1989. Analyzed on November 30, 1989.

RESULTS

<u>Sample I.D.</u>	<u>Sample Description</u>	<u>SWL Lab No.</u>	<u>Asbestos Type</u>	<u>% Asbestos*</u>	<u>Other Fibrous Constituents %</u>
1	White Fibers w/Black Tar in White Coating	89-11-374-1	Amosite Chrysotile	10 2-3	Cellulose (15) Fibrous Glass (10)
2	White Fibrous Powder with Paper Backing	89-11-374-2	None Detected	—	Cellulose (10)
3	White Cementitious Mix w/Fibers on Metal Backing	89-11-374-3	None Detected	—	Cellulose (10) Fibrous Glass (5-8)
4	White Cementitious Mix w/Fibers on Metal Backing	89-11-374-4	Amosite Chrysotile	5-8 5-8	Fibrous Glass (5-8) Cellulose (5-8)
5	White Cementitious Mix w/Fibers on Metal Backing	89-11-374-5	Amosite Chrysotile	15 5-8	Fibrous Glass (5)
6	White Cementitious Mix w/Fibers on Fabric Backing	89-11-374-6	Chrysotile	10	Fibrous Glass (15)

* The percentage of asbestos is microscopically visually estimated.

Method of Analysis: CFR-47, No. 103, Appendix A (Polarized Light Microscopy)

SWL Houston is an accredited laboratory for bulk asbestos analysis - Laboratory I.D. No. 1502 00.

Samples will be discarded after a storage period of 60 days, unless other arrangements are specified. Results presented pertain to only actual sample analyzed.

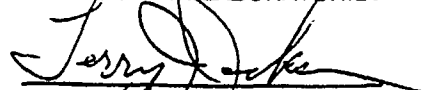
Technician: Charles Remkes

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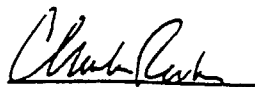
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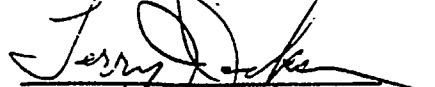
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Client Union Carbide Corporation
Star Route Box 90
Brownsville, Texas 78521
Attn: Ms. Belia Cortez

Client No. 8-8813-00
Report No. 89-11-374
Report Date 12/4/89
RGV REPORT NO: 26262

Project Bulk samples submitted for asbestos content analysis. Received from SWL-Los Fresnos at SWL-Houston on November 30, 1989. Analyzed on November 30, 1989.

RESULTS

<u>Sample I.D.</u>	<u>Sample Description</u>	<u>SWL Lab No.</u>	<u>Asbestos Type</u>	<u>% Asbestos*</u>	<u>Other Fibrous Constituents %</u>
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* The percentage of asbestos is microscopically visually estimated.

Method of Analysis: CFR-47, No. 103, Appendix A (Polarized Light Microscopy)

SWL Houston is an accredited laboratory for bulk asbestos analysis - Laboratory I.D. No. 1502 00.

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Technician: Charles Remkes

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Method of Analysis: CFR-47, No. 103, Appendix A (Polarized Light Microscopy)

SwL Houston is an accredited laboratory for bulk asbestos analysis - Laboratory I.D. No. 1502 00.

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Technician: Charles Remkes

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Client Union Carbide Corporation
Star Route Box 90
Brownsville, Texas 78521
Attn: Ms. Belia Cortez

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Report No. 89-11-374
Report Date 12/4/89
RGV REPORT NO: 26262

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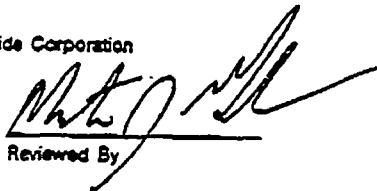
Method of Analysis: CFR-47, No. 103, Appendix A (Polarized Light Microscopy)

SWL Houston is an accredited laboratory for bulk asbestos analysis - Laboratory I.D. No. 1502 00.

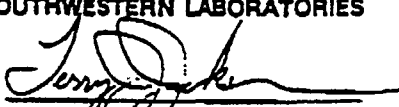
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Technician: Charles Remkes

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of pages: 1

To	R.E. O'BRYEN	From	D. PARSONS
Co.	UNION CARBIDE	Co.	ENSR
Dir.	ENV.	Phone	(713) 520-9900
Fax	(713) 522-2927	Fax	(713) 520-1302

BUDGET ESTIMATE
UNION CARBIDE
BRAUNSVILLE, TX

PLAINTIFF'S EXHIBIT

UC-P-77

① ASBESTOS LANDFILL

Volume To Dispose

$$500' \times 700' \times 4' = 53,000 \text{ C.Y.} \times 1.3 = 67,600 \text{ C.Y.}$$

OFFSITE DISPOSALASSUME 20 CY LOADS/TRUCK ³³⁸⁰ ~~2000~~ LOADS

$$\text{LOAD } 13 \times (53,000 \times 1.3) = \$203,800$$

$$\text{TRUCK LINE } 20 \times \frac{3380}{2000} = 67,600$$

$$\text{HAUL } \$600 \times \frac{3380}{2000} = 2,025,000$$

$$\text{LAND FILL FEE } \$36.25 \times (53,000 \times 1.3) = 2,262,000$$

$$\begin{array}{r} 4,560,400 \\ \hline \text{TOTAL} = \end{array}$$

CAP EXISTING DISPOSAL AREA

$$500' \times 700' = 39,000 \text{ S.Y.}$$

$$\text{CAP (REMOVED CLAY)} 39,000 \times \$20.00/\text{sq. yd.} = \$780,000$$

(800,000)

PAGE 2-43② CATALYST PILE TO NORTH

VOLUME TO DISPOSE

$$100' \times 100' \times 4' = 1480 \text{ CY} \times 1.3 = 1925 \text{ CY}$$

OFFSITE DISPOSALASSUME 20 CY LOADS/TRUCK $\approx$ 95 LOADS

$$\text{LOAD } \$3^{\text{rd}} \times (1480 \times 1.3) = \$ 5,772$$

$$\text{TRUCK LINE } \$20^{\text{th}} \times 95 = 1,900$$

$$\text{HAUL } \$600^{\text{th}} \times 95 = 57,000$$

$$\text{LANDFILL FEE } \$36.25 \times (1480 \times 1.3) = 69,745$$

$$\text{TOTAL} = \frac{134,417}{(135,000)}$$

③ CATALYST PILES (6 SCATTERED)

VOLUME TO DISPOSE

$$25' \times 25' \times 4' \times 6 \text{ PILES} = 555 \text{ CY} \times 1.3 = 720 \text{ CY}$$

ASSUME 1 CY WEIGHS 12,150 LBS @ 450#/CY

TRUCK CAN HAUL 4,000 LBS = 3.3 CY/LOAD

OFFSITE DISPOSAL

$$\frac{720}{3.3} \text{ CY LOADS/TRUCK} \approx 220 \text{ LOADS}$$

$$\text{LOAD } \$3^{\text{rd}} \times (555 \times 1.3) = \$ 2,165$$

$$\text{HAUL } \$600^{\text{th}} \times 220 = 132,000$$

$$\text{LANDFILL FEE } \$36.25 \times (555 \times 1.3) = 26,100$$

$$\text{TOTAL} = \frac{160,265}{(160,000)}$$

PAGE 3 of 3④ PURPLE COLORED / OILY DIAT PILES

VOLUME TO DISPOSE

ASSUME 250 CY (LOOSE)

TPH 600-1500 PPH

OFFSITE DISPOSAL (ASSUME 20 CY/TRUCK = 13 TRUCKS)

LOAD \$3.00 (250) = \$ 750

TRUCK UNLOAD \$20.00 X 13 = 260

HAUL \$600.00 X 13 = 7800

LANDFILL FEE \$36.25 X 250 = 9065

TOTAL = \$17,875
(18,000)⑤ SLURRY 2 (OILY BLACK DIRT)

VOLUME TO DISPOSE

75' X 75' X 12' = ~~2500~~ ³²⁵⁰ X 1.3 = ~~3250~~

TPH 1500-5000 PPH

OFFSITE DISPOSALASSUME 20 CY LOAD/TRUCK ¹⁶⁵ ~~2500~~ LOADSLOAD \$3.00 X (³²⁵⁰ ~~2500~~ X 1.3) = \$ ⁹⁷⁵⁰ ~~2500~~TRUCK UNLOAD \$20.00 X ¹⁶⁵ ~~13~~ = ³³⁰⁰ ~~260~~HAUL \$600.00 X ¹⁶⁵ ~~13~~ = ⁹⁹⁰⁰⁰ ~~7800~~LANDFILL FEE \$41.25 X (³²⁵⁰ ~~2500~~ X 1.3) = ^{134,062} ~~9065~~

(250,000)

TOTAL: \$246,112
~~104,062~~

BOBBY - 1 MTR FOR VERY ROUGH ESTIMATE

TOTAL OFF-SITE

~ \$5,120,000

TOTAL ON-SITE

\$780,000 + 20% = ~ \$1,000,000

IF NO MTR REQUIREMENTS/JUST COVER