

MARINE DOCK EMPLOYEES "PERSONNEL"  
BENZENE EXPOSURE LEVELS. T.W.A.  
1981 THRU 1985

| <u>YEAR</u> | <u>NO. SAMPLES</u> | <u>% ABOVE 1.0ppm</u> | <u>% ABOVE 10.0ppm</u> |
|-------------|--------------------|-----------------------|------------------------|
| 1981        | 41                 | 54%                   | 22%                    |
| 1982        | 22                 | 72%                   | 27%                    |
| 1983        | 25                 | 60%                   | 44%                    |
| 1984        | 10                 | 100%                  | 40%                    |
| 1985        | 6                  | 66%                   | 33%                    |

NOTE: INDUSTRIAL HYGIENE RECOMMENDED  
RESPIRATORY PROTECTION USED  
DURING ALL BENZENE BARGE LOADING.

DO 087914  
CONFIDENTIAL

11-4-85

QUARTER 1 YEAR 1995

### MINIMAL DETECTABLE LIMIT AND UNIT

DO 087915  
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\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

41 Personnel  
Samples

1981

BENZENE

Personnel  
91 Samples above 10 ppm

12 above 1 ppm

|        |        |
|--------|--------|
| 26.12  | 26.12  |
| 28.50  | 1.88   |
| 30.27  | 2.98   |
| 43.80  | 8.87   |
| 51.46  | 4.69   |
| 77.79  | 6.02   |
| 320.64 | 1.99   |
| 66.95  | 6.08   |
| 68.24  | 3.65   |
|        | 6.56   |
|        | 28.50  |
|        | 1.71   |
|        | 1.17   |
|        | 6.82   |
|        | 30.27  |
|        | 43.80  |
|        | 51.46  |
|        | 3.79   |
|        | 77.79  |
|        | 320.64 |
|        | 66.95  |
|        | 68.24  |

22 Samples 1982

Benzene

6 Samples above 10 ppm

26.45

35.90

17.47

23.96

16.77

53.08

16 Samples above 1 ppm

8.07

26.45

4.56

3.64

2.96

3.49

7.23

9.52

8.49

4.26

1.31

35.90

17.47

23.96

16.77

53.08

1983

BENZENE

25 Samples

11 Samples above 10ppm

26.48  
35.06  
171.98  
14.28  
103.62  
31.34  
14.60  
13.19  
28.81  
20.29  
30.42

15 Samples above 1ppm

26.48  
35.06  
171.98  
14.28  
103.62  
31.34  
4.2  
14.6  
1.19  
9.29  
13.19  
28.81  
20.29  
3.24  
30.42

10 Personnel

1984

BENZENE

4 Samples above 10 ppm

29.98  
12.35  
21.29  
19.44

12 Samples above 1 ppm

1.85  
29.98  
12.35  
6.61  
1.10  
1.16  
8.27  
2.97  
21.29  
19.44

1702A  
17026  
-plant

20000 Barrel  
10000

4 1/2 hrs  
2 1/2 hrs

West Blowers  
Slipstick & Barge Delivered -  
Hand crank pump - Sample  
Disconnect required on Disconnect procedure  
Bully - CIRA -  
blowdown procedure  $\rightarrow$  11-1-85  
OK

B  
T  
V

Benzene

Blowers :

How effective? for most part they are effective

CAM

working better, operations understood better

Manways: How often opened - Not often - or plugged  
regarding sampling data continued  
gaging - sometimes last phase of loading when tapes not working  
pressuring up NO

Sampling - 90% of time Sample Tapes used (with hand p)

Tape vs Rods  
Slipstick

Gauging -

How many in service <sup>pages</sup> <sup>Imperial</sup> <sup>Ocean Bunker 5102</sup>

How many works - not set many tapes left  
Slipstick work well

How many manholes are opened (%) 10%

Sampling Barges (handcrank pump) used all the time

How many samples are caught by open manways

Everyone using handcrank pump.

Changed procedure for Barges  $\left\{ \begin{array}{l} \text{break vacuum - check for} \\ \text{leakage - paint} \\ \text{better samples now - less} \\ \text{H}_2\text{O \& Contamination} \\ \text{6 or 7 months ago} \end{array} \right.$

Disconnect

Drip pans

Everything blown back then are with N<sub>2</sub> - the  
~~pressure~~ section closest plant (inner are  
is blown back let (N<sub>2</sub> stripping pump) <sup>on dock</sup>

2nd - Blow N<sub>2</sub> then outer arm to  
Barge (before disconnect)

Shipments / month

Drip pans  
very little if any  
liquid seen in  
drip pans

90lb (pair)  
CS perma Bays

### Other comments

CS-C9 Bays - smell more -  
Benzene - don't smell often

Bob Kuhn - - Avg Bays / month

Jerry Dostal - - Bays with slip tubes

9 Dedicated Bays for Benzene - all equipped with  
slip tubes

63 samples analyzed  
6 in lab  
1985

# BENZENE

2 Samples above 10ppm

54.81

20.10

4 Samples above 1ppm

3.60

8.05

54.81

20.10

check with Bill Ladford

.5% Benzene in Fuel oil  
less in Russian oil

15/20 Benzene Per Month when loading as Benzene

1983  
\$ 27000  
to buy up Benzene  
for 3 psis

~~Standard~~

Standard should go into effect 1986

Barges are not designed to hold Russian  
Packings  
Manway covers

3.5 M<sup>2</sup> (psis) can go to flame?

\* Blower Capacity on Vent?

H<sub>2</sub> (Hydrocarbon)  
Dragnetaker

\* Benzene leak patrol

Day vs Night Exposures?

\* STEL Samples emphasized

Remove valve on air divider blowers

### EMPLOYEE EXPOSURE SUMMARY

QUARTER 1 YEAR 1985

FILED IN BY J. L. MOREAU, JR.

PLANT MARINE DOCK #1 BLOCK            STRESS METHYLENE CHLORIDE MINIMAL DETECTABLE LIMIT AND UNIT             
0801-5849

[illegible]

DO 087924  
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\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

### EMPLOYEE EXPOSURE SUMMARY

QUARTER 2 YEAR 1985

FILED IN BY J.L. MOREAU, JR.

| PLANT          | BLOCK | STRESS | METHYLENE CHLORIDE | MINIMAL DETECTABLE LIMIT AND UNIT |
|----------------|-------|--------|--------------------|-----------------------------------|
| MARINE DOCK #1 |       |        |                    |                                   |

METHYLENE  
CHLORIDE

### MINIMAL DETECTABLE LIMIT AND UNIT

00.01-5644

[illegible]

**\* PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

DO 087925  
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QUARTER 1 YEAR 1985

PLANT MARINE DOCK #1 BLOCK \_\_\_\_\_ STRESS CHLOROFORM MINIMUM DETECTABLE LIMIT AND UNIT \_\_\_\_\_  
0000 8619

DO 087926  
CONFIDENTIAL

\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

### EMPLOYEE EXPOSURE SUMMARY

QUARTER 2 YEAR 1985

FILLED IN BY J.L. MOREAU, JR.

PLANT MARINE DOCK #1 BLOCK            STRESS CHLOROFORM MINIMAL DETECTABLE LIMIT AND UNIT             
0000 5.3.99

[illegible]

\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

DO 087927  
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QUARTER 1 YEAR 1785

FILLED IN BY J.L. MOREAU, JR.

PLANT MARINE DOCK #1 BLOCK            STRESS <sup>CARBON</sup>~~TETRACHLORIDE~~ MINIMAL DETECTABLE LIMIT AND UNIT             
0002 3054

[illegible]

\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

DO 087928  
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## EMPLOYEE EXPOSURE SUMMARY

QUARTER 2 YEAR 1985

FILLED IN BY J. L. MOREAU, JR.

PLANT MARINE DOCK #1 BLOCK            STRESS CARBON TETRACHLORIDE MINIMAL DETECTABLE LIMIT AND UNIT             
100% 154

[illegible]

\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

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QUARTER 1 YEAR 1985

FILED IN BY J. L. MOREAU, JR.

PLANT MARINE DOCK #1 BLOCK \_\_\_\_\_ STRESS PERCHLORO-ETHYLENE MINIMAL DETECTABLE LIMIT AND UNIT \_\_\_\_\_  
0002 3698

[illegible]

**\* PROTECTIVE EQUIPMENT: (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection**

DO 087930  
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QUARTER 2 YEAR 1985

| PLANT          | BLOCK | STRESS | ETHYLENE DICHLORIDE | MINIMAL DETECTABLE LIMIT AND UNIT |
|----------------|-------|--------|---------------------|-----------------------------------|
| MARINE DOCK #1 |       |        |                     |                                   |

100. - 8531

\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

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### EMPLOYEE EXPOSURE SUMMARY

QUARTER 1 YEAR 1985

FILLED IN BY J. L. MOREAU, JR.

PLANT MARINE DOCK #2

**BLOCK**

## STRESS

TOLUENE

### MINIMAL DETECTABLE LIMIT AND UNIT

000,7 5070

[illegible]

\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

DO 087932  
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### MINIMAL DETECTABLE LIMIT AND UNIT

## LIMIT AND UNIT

DO 087933  
CONFIDENTIAL

\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

FILLED IN BY J.L. MOREAU, JR.

EMPLOYEE EXPOSURE SUMMARY

QUARTER 1 YEAR 1980PLANT MARINE DOCK # 2 BLOCK \_\_\_\_\_ STRESS VINYL CHLORIDE MINIMAL DETECTABLE LIMIT AND UNIT \_\_\_\_\_  
01/4 1980

| JOB CLASS | AREA/TASK | PERSONNEL |           |             |      |      | AREA            |             |      |      | EXCURSION       |             |       |       |
|-----------|-----------|-----------|-----------|-------------|------|------|-----------------|-------------|------|------|-----------------|-------------|-------|-------|
|           |           | *PT. EQ.  | TWA BASIS | NO. SAMPLES | AVG. | HIGH | SAMPLE DURATION | NO. SAMPLES | AVG. | HIGH | EXCUR. DURATION | NO. SAMPLES | AVG.  | HIGH  |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 0'55          | 2           | 4.13  | 8.26  |
| 3         |           |           |           |             |      |      |                 |             |      |      | X 0'55"         | 1           | 0.13  | 0.13  |
| 4         |           |           |           |             |      |      |                 |             |      |      | X 2'00"         | 1           | 4.01  | 4.01  |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 2'00"         | 1           | 18.0  | 18.0  |
| 3         |           | 4         |           |             |      |      |                 |             |      |      | X 2'00"         | 1           | 18.8  | 18.8  |
| 3         |           |           |           |             |      |      |                 |             |      |      | X 0'45"         | 1           | 8.38  | 8.38  |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 0'30"         | 1           | 435.0 | 435.0 |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 0'40"         | 1           | 263.0 | 263.0 |
| 3         |           |           |           |             |      |      |                 |             |      |      | X 0'40"         | 1           | 0.64  | 0.64  |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 0'40"         | 2           | 41.95 | 42.7  |
| 3         |           | 4         |           |             |      |      |                 |             |      |      | X 1'03"         | 1           | 39.7  | 39.7  |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 1'00"         | 1           | 3.31  | 3.31  |
| 4         |           |           |           |             |      |      |                 |             |      |      | X 1'00"         | 1           | 1.33  | 1.33  |
| 4         |           |           |           |             |      |      |                 |             |      |      | X 1'05"         | 1           | 0.68  | 0.68  |
| 3         |           | 4         |           |             |      |      |                 |             |      |      | X 1'05"         | 1           | 7.41  | 7.41  |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 1'05"         | 1           | 7.92  | 7.92  |
| 4         |           |           |           |             |      |      |                 |             |      |      | X 1'25"         | 1           | 0.7   | 0.7   |
| 3         |           | 4         |           |             |      |      |                 |             |      |      | X 1'40"         | 1           | 2.04  | 2.04  |
| 2         |           | 4         |           |             |      |      |                 |             |      |      | X 1'40"         | 1           | 2.34  | 2.34  |
| 3         |           |           |           |             |      |      |                 |             |      |      | X 0'45          | 1           | 0.09  | 0.09  |

\* PROTECTIVE EQUIPMENT: (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

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QUARTER 1 YEAR 1785

### MINIMAL DETECTABLE LIMIT AND UNIT

DO 087935  
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\* **PROTECTIVE EQUIPMENT:** (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

FILLED IN BY J.L. MOREAU, JR.

EMPLOYEE EXPOSURE SUMMARY

QUARTER 2 YEAR 1980

PLANT MARINE DOCK #2 BLOCK            STRESS VINYL CHLORIDE MINIMAL DETECTABLE LIMIT AND UNIT           

01/1/1980

| JOB CLASS | AREA/TASK | PERSONNEL |           |             |      |      |  | AREA            |             |      |      | EXCURSION       |             |               |       |
|-----------|-----------|-----------|-----------|-------------|------|------|--|-----------------|-------------|------|------|-----------------|-------------|---------------|-------|
|           |           | *PT. EQ.  | TWA BASIS | NO. SAMPLES | AVG. | HIGH |  | SAMPLE DURATION | NO. SAMPLES | AVG. | HIGH | EXCUR. DURATION | NO. SAMPLES | AVG.          | HIGH  |
| 4         |           |           |           |             |      |      |  |                 |             |      |      | X 0'40"         | 1           | 0.25          | 0.25  |
| 3         |           | 4         |           |             |      |      |  |                 |             |      |      | X 0'50"         | 1           | 30.4          | 30.4  |
| 2         |           | 4         |           |             |      |      |  |                 |             |      |      | X 0'40"         | 1           | 99.0          | 99.0  |
| 2         |           | 4         |           |             |      |      |  |                 |             |      |      | X 1'05"         | 1           | 0.46          | 0.46  |
| 3         |           | 4         |           |             |      |      |  |                 |             |      |      | X 1'03"         | 1           | 0.24          | 0.24  |
| 4         |           |           |           |             |      |      |  |                 |             |      |      | X 1'05"         | 1           | NONE DETECTED |       |
| 2         |           | 4         |           |             |      |      |  |                 |             |      |      | X 0'50"         | 2           | 56.44         | 111.0 |
| 3         |           |           |           |             |      |      |  |                 |             |      |      | X 0'50"         | 1           | 0.22          | 0.22  |
| 2         |           | 4         |           |             |      |      |  |                 |             |      |      | X 1'10"         | 2           | 0.30          | 0.32  |
| 3         |           |           |           |             |      |      |  |                 |             |      |      | X 1'10"         | 1           | 0.11          | 0.11  |
| 2         |           | 4         |           |             |      |      |  |                 |             |      |      | X 0'55"         | 2           | 1.51          | 1.60  |
| 4         |           |           |           |             |      |      |  |                 |             |      |      | X 0'45"         | 1           | NONE DETECTED |       |
| 4         |           |           |           |             |      |      |  |                 |             |      |      | X 1'30"         | 1           | 0.72          | 0.72  |
| 2         |           | 4         |           |             |      |      |  |                 |             |      |      | X 1'30"         | 2           | 254.5         | 376.0 |
|           |           |           |           |             |      |      |  |                 |             |      |      |                 |             |               |       |
|           |           |           |           |             |      |      |  |                 |             |      |      |                 |             |               |       |
|           |           |           |           |             |      |      |  |                 |             |      |      |                 |             |               |       |
|           |           |           |           |             |      |      |  |                 |             |      |      |                 |             |               |       |
|           |           |           |           |             |      |      |  |                 |             |      |      |                 |             |               |       |
|           |           |           |           |             |      |      |  |                 |             |      |      |                 |             |               |       |
|           |           |           |           |             |      |      |  |                 |             |      |      |                 |             |               |       |

\* PROTECTIVE EQUIPMENT: (1) Mouthbit (2) Full Face (3) Half or Dust Face (4) Air Supply (5) Hearing Protection

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QUARTER 2 YEAR 1985

### MINIMAL DETECTABLE LIMIT AND UNIT

DO 087937  
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PROTECTIVE EQUIPMENT. (1) Masking (2) Eye Protection (3) Ear Protection (4) Air Supply (5) Hearing Protection