

PPG INDUSTRIES, INC.  
INDUSTRIAL CHEMICAL DIVISION  
LAKE CHARLES, LOUISIANA

LD 1121H  
04-09-1975  
WOOD, M W

CONTINUING PROGRAM OF MONITORING ATMOSPHERIC  
CONTAMINANTS WITHIN THE LAKE CHARLES PLANT

Distribution

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- 13.-16. Technical Files
- 17.-18. Technical Information Coordinator
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20. Laboratory File

Key Words

Occupational Environment  
Industrial Hygiene  
Atmospheric Contaminants  
NIOSH  
OSHA  
AGCIH  
Personnel Monitoring  
Area Monitoring

1 BB 0000122 1

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CONTINUING PROGRAM OF MONITORING ATMOSPHERIC  
CONTAMINANTS WITHIN THE LAKE CHARLES' PLANT  
LD-1121G

ABSTRACT

The tables composing this report are continuations of occupational environment surveys started early in 1969 and contain data from various plant areas from August 1973 to July 1974.

INTRODUCTION

The periodic investigation of employees' occupational environments initiated in 1969 is described in detail in LD-1121. This report is an addendum and contains tabulated data obtained from August 1973 through July 1974.

DISCUSSION

Testing in several areas has been deleted where previously compiled data does not warrant further investigation.

Several procedural changes have been made. Chlorine in air will no longer be determined by personnel monitoring. The apparatus is in short supply and I believe the area monitoring technique now adopted is much more reliable.

Lead in air is no longer determined by the MSA method. Filter membrane collection and atomic absorption analysis techniques as recommended by NIOSH are now in use.

Due to the large number of chlorocarbon determinations made in Area "B" and in shipping areas, this information is deleted from this report. This data is reported directly to management responsible for the respective areas.

Author:

Mark W. Wood 8-9-74  
Mark W. Wood Date

Approved:

C. P. LeBlanc 8-9-74  
C. P. LeBlanc Date

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H. J. Hoenes, Jr. Date

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1 BB 0000124 1

Threshold Limit Values of Airborne Contaminants  
 (Exposure Possible within Lake Charles' Plant)  
Federal Register, Volume, 39, No. 125

| <u>Contaminant</u>                         | <u>T.L.V. Concentration</u> |                   |
|--------------------------------------------|-----------------------------|-------------------|
| Ammonia                                    | 25                          | ppm               |
| Carbon Monoxide                            | 50                          | ppm               |
| Cadmium (Dust)                             | 0.2                         | mg/M <sup>3</sup> |
| Chlorine                                   | 1                           | ppm               |
| Chromium                                   | 1                           | mg/M <sup>3</sup> |
| Coal Tar Pitch Volatiles (Benzene Soluble) | 0.2                         | mg/M <sup>3</sup> |
| Copper (Fume)                              | 0.1                         | mg/M <sup>3</sup> |
| Copper (Dust)                              | 1                           | mg/M <sup>3</sup> |
| Hydrogen Sulfide                           | 10                          | ppm               |
| Lead (Inorganic)                           | 0.15                        | mg/M <sup>3</sup> |
| Mercury*                                   | 0.1                         | mg/M <sup>3</sup> |
| Sodium Hydroxide                           | 2                           | mg/M <sup>3</sup> |

\*American Conferences of Governmental Industrial Hygienists (ACGIH) Standard for mercury is 0.05 mg/M<sup>3</sup>.

Mineral Dusts

|                     |    |                   |
|---------------------|----|-------------------|
| Nuisance Dust       | 15 | mg/M <sup>3</sup> |
| Respirable Fraction | 5  | mg/M <sup>3</sup> |

Asbestos

Standards based on length of exposure and type of protection worn.

| <u>Exposure</u>    | <u>Fibers &gt; 5 <math>\mu</math>m/ml</u> |                             |
|--------------------|-------------------------------------------|-----------------------------|
|                    | <u>No Protection</u>                      | <u>Approved Respirators</u> |
| 8 Hours            | 5                                         | 25                          |
| 15 Minutes Ceiling | 10                                        | 50                          |

TABLE 1

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Area</u>          | <u>Monitored<br/>Personnel</u>            | <u>Date-Time</u>  | <u>Contaminant</u>  | <u>Concentration</u> | <u>Conditions</u> | <u>Method</u>                                         |
|----------------------|-------------------------------------------|-------------------|---------------------|----------------------|-------------------|-------------------------------------------------------|
| Mercury Cell Circuit | Area - Center<br>of Cell<br>Building      | 7-24-74 A.M.      | Chlorine            | 0.4 ppm              | 2 Hours           | Impinger<br>Sampler and<br>o-Tolidine<br>Colorimetric |
|                      | Area - West<br>Center of<br>Cell Building | 7-24-74 A.M.      | Chlorine            | 0.5 ppm              | 2 Hours           | Ditto                                                 |
|                      | Cell Auxiliary<br>Operator                | 7-26-74 Day Shift | Hydrogen<br>Sulfide | < 0.01 ppm           | 7 Hours           | H <sub>2</sub> S Badge                                |
|                      | Brine Operator                            | 7-26-74 Day Shift | Ditto               | < 0.01 ppm           | 7 Hours           | Ditto                                                 |

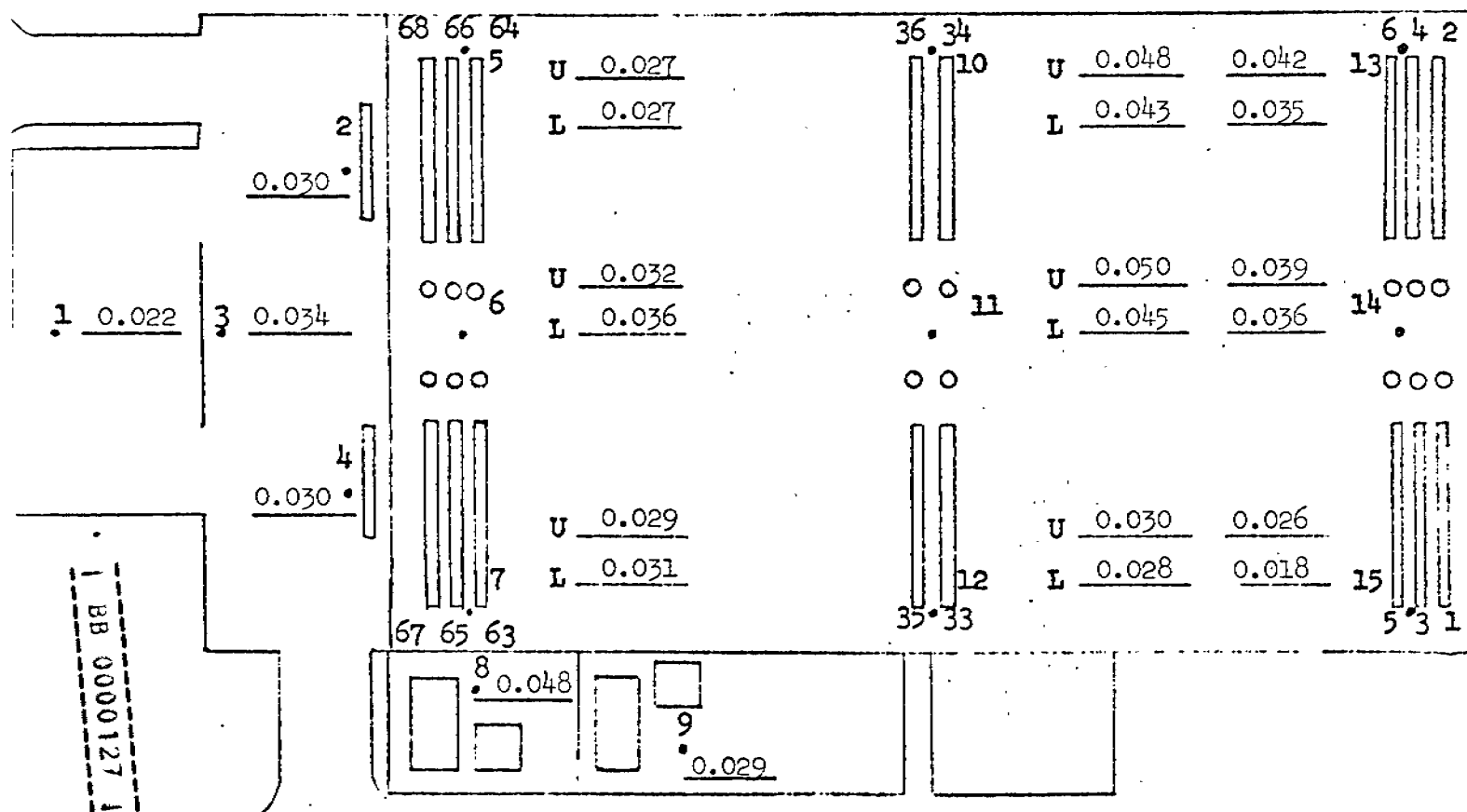
1 BB 0000126 1

ID-11216/4

TABLE 2  
MERCURY IN AIR AT MERCURY CELL  
(Hg in mg/m<sup>3</sup>)

Date : 7/13/73 to 7/29/74

|               |              |                  |                   |                           |              |
|---------------|--------------|------------------|-------------------|---------------------------|--------------|
| Laboratory    | <u>0.014</u> | Control Room     | <u>0.012</u>      | H <sub>2</sub> Stack Area | <u>0.005</u> |
| Lunch Room    | <u>0.044</u> | Office           | <u>0.010</u>      | Open Cells                | --           |
| No. of People | _____        | Motor Control    | <u>0.040</u>      | Relative Humidity         | --           |
| Rest Room     | <u>0.025</u> | Area Maintenance | <u>0.012</u>      | Temperature               | --           |
| Locker Room   | <u>0.020</u> | 13.8 KV Sw. Gr.  | <u>&lt; 0.005</u> | Maintenance               | <u>0.005</u> |
|               |              |                  |                   | Lunch Room                |              |
|               |              |                  |                   | Bar. Pressure             | --           |
| 16            | <u>0.005</u> |                  |                   |                           |              |



LD-1121G/5

U - Cell Floor  
L - Ground Floor

TABLE 3

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Area</u>                      | <u>Monitored<br/>Personnel</u>       | <u>Date-Time</u> | <u>Contaminant</u> | <u>Concentration</u> | <u>Conditions</u> | <u>Method</u>               |
|----------------------------------|--------------------------------------|------------------|--------------------|----------------------|-------------------|-----------------------------|
| Brine Treatment/<br>Liquefaction | Area South<br>of Reboilers           | 8-1/74 AM        | Chlorine           | < 0.1 ppm            | 1 Hour            | o-Tolidine,<br>Colorimetric |
|                                  | Liquefaction<br>Operator (Gray)      | 8-1-74 AM        | Ammonia            | < 5 ppm              | 4 Hours           | MSA Monitair<br>Sampler     |
|                                  | Brine Treatment<br>Operator (Pearce) | 8-1-74 AM        | Ammonia            | < 5 ppm              | 4 Hours           | Ditto                       |

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LD-1121G/6

TABLE 4

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Area</u>                               | <u>Monitored Personnel</u>          | <u>Date-Time</u> | <u>Contaminant</u> | <u>Concentration</u>  | <u>Conditions</u> | <u>Method</u>                                             |
|-------------------------------------------|-------------------------------------|------------------|--------------------|-----------------------|-------------------|-----------------------------------------------------------|
| Plastic Plant<br>and Area                 | -                                   | 7-24-74 A.M.     | NaOH Mist          | 0.9 mg/M <sup>3</sup> | 2 Hours           | Water Scrubber/<br>Atomic Absorp-<br>tion Sodium<br>Anal. |
| S <sup>2</sup> /Anhydrous -<br>aging Area | -                                   | 7-24-74 A.M.     | NaOH Mist          | 0.4 mg/M <sup>3</sup> | 2 Hours           | Ditto                                                     |
| Plastic Bridge                            | North Side,<br>near Control<br>Room | 8-1-74 AM        | Chlorine           | < 0.1 ppm             | 1 Hour            | o-Tolidine,<br>Colorimetric                               |

1 BB 0000129 1

LD-1121G/7

TABLE 5

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Area</u>              | <u>Monitored<br/>Personnel</u> | <u>Date-Time</u> | <u>Contaminant</u> | <u>Concentration</u> | <u>Conditions</u> | <u>Method</u>            |
|--------------------------|--------------------------------|------------------|--------------------|----------------------|-------------------|--------------------------|
| Aphragm Cell<br>Circuits | Tender,<br>Circuits 1,2        | 7-23-74 AM       | Chlorine           | 1 ppm                | 4 Hours           | MSA Monitaire<br>Sampler |
|                          | Tender,<br>Circuits 5,6        | 7-23-74 AM       | Chlorine           | 1 ppm                | 4 Hours           | Ditto                    |
|                          | Tender,<br>Circuits 7,8        | 7-23-74 AM       | Chlorine           | 0.5 ppm              | 4 Hours           | Ditto                    |

1 BB 0000130 1

LD-1121G/8

TABLE 6

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Location</u>                              | <u>Monitored Personnel</u> | <u>Date-Time</u> | <u>Contaminant</u> | <u>Concentration</u>   | <u>Conditions</u>                        | <u>Method</u>            |
|----------------------------------------------|----------------------------|------------------|--------------------|------------------------|------------------------------------------|--------------------------|
| Diphragm Cell,<br>pair and,<br>manufacturing | DeJean                     | 3-6-74 PM        | Lead               | 0.88 mg/M <sup>3</sup> | Pouring Anodes<br>(Approximately 4 Hrs.) | NIOSH Filter<br>Membrane |
|                                              | Guillory                   | 3-6-74 PM        | Lead               | 0.58 mg/M <sup>3</sup> | Solder Wiping<br>(Approx. 4 Hours)       | Ditto                    |
|                                              | Clifton                    | 3-8-74 AM        | Lead               | 0.17 mg/M <sup>3</sup> | Pouring Anodes<br>(4 Hours)              | Ditto                    |
|                                              | Clements                   | 3-8-74 AM        | Lead               | 1.03 mg/M <sup>3</sup> | Solder Wiping<br>(4 Hours)               | Ditto                    |
|                                              | DeJean                     | 3-13-74 AM       | Lead               | 0.34 mg/M <sup>3</sup> | Pouring Anodes<br>(3 Hours)              | Ditto                    |
|                                              | Guillory                   | 3-13-74 AM       | Lead               | 0.31 mg/M <sup>3</sup> | Solder Wiping<br>(3 Hours)               | Ditto                    |
|                                              | McNabb                     | 3-14-74 AM       | Lead               | 0.50 mg/M <sup>3</sup> | Adding Pb to Pots<br>(3 Hours)           | Ditto                    |
|                                              | Hartman                    | 3-15-74 PM       | Lead               | 0.04 mg/M <sup>3</sup> | Tinning Cathodes<br>(2.5 Hours)          | Ditto                    |
|                                              | Clements                   | 6-13-74 AM       | Lead               | 0.07 mg/M <sup>3</sup> | Adding Pb to Pots<br>(1.5 Hours)         | Ditto                    |
|                                              | Clifton                    | 6-13-74 AM       | Lead               | 0.03 mg/M <sup>3</sup> | Pouring Anodes<br>(1.5 Hours)            | Ditto                    |
|                                              | Hartman                    | 6-13-74          | Lead               | 0.17 mg/M <sup>3</sup> | Tinning Cathodes<br>(1 Hour)             | Ditto                    |

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ID-11216/9

TABLE 8 - (Cont'd.)

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Area</u>                                                            | <u>Monitored Personnel</u>          | <u>Date-Time</u>  | <u>Contaminant</u> | <u>Concentration</u>   | <u>Conditions</u>     | <u>Method</u>            |
|------------------------------------------------------------------------|-------------------------------------|-------------------|--------------------|------------------------|-----------------------|--------------------------|
| apragm Cell Repair<br>and Manufacturing<br>Area Sampling for<br>(Lead) | Center Lunch<br>Table               | 3-13-74 AM        | Lead               | 0.08 mg/M <sup>3</sup> | Approximately 3 Hours | NIOSH Filter<br>Membrane |
|                                                                        | East Wall, by<br>Temp. Recorder     | 3-14-74 AM        | Lead               | 0.03 mg/M <sup>3</sup> | Approximately 3 Hours | Ditto                    |
|                                                                        | Between Pb Pots                     | 3-15-74 Day Shift | Lead               | 0.07 mg/M <sup>3</sup> | 6.3 Hours             | Ditto                    |
|                                                                        | South of<br>Tinning Area            | 3-19-74 PM        | Lead               | 0.05 mg/M <sup>3</sup> | 3.5 Hours             | Ditto                    |
|                                                                        | North of Pb<br>Pots                 | 3-19-74 PM        | Lead               | 0.05 mg/M <sup>3</sup> | 3.5 Hours             | Ditto                    |
|                                                                        | North of Pb<br>Pots                 | 3-27-74 Day Shift | Lead               | 0.06 mg/M <sup>3</sup> | 7 Hours               | Ditto                    |
|                                                                        | East of Pb<br>Pots                  | 3-27-74 Day Shift | Lead               | 0.06 mg/M <sup>3</sup> | 7 Hours               | Ditto                    |
|                                                                        | Between Pb<br>Pots                  | 3-27-74 Day Shift | Lead               | 0.04 mg/M <sup>3</sup> | 7 Hours               | Ditto                    |
|                                                                        | South of<br>Tinning Area            | 3-27-74 Day Shift | Lead               | 0.11 mg/M <sup>3</sup> | 7 Hours               | Ditto                    |
|                                                                        | Between Tinning<br>Area and Pb Pots | 3-28-74 AM        | Lead               | 0.06 mg/M <sup>3</sup> | 5.5 Hours             | Ditto                    |
|                                                                        | Between Pb Pots                     | 3-28-74 AM        | Lead               | 0.03 mg/M <sup>3</sup> | 5.5 Hours             | Ditto                    |

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LD-11216/10

TABLE 6 - (Cont'd.)

## OCCUPATIONAL ENVIRONMENT AIR MONITORING

| Area                                        | Monitored Personnel | Date-Time  | Contaminant | Concentration          | Conditions                                                | Method                                       |
|---------------------------------------------|---------------------|------------|-------------|------------------------|-----------------------------------------------------------|----------------------------------------------|
| Diaphragm Cell<br>pair and<br>manufacturing | Guillory            | 3-13-74 AM | Tin         | 0.28 mg/M <sup>3</sup> | Solder Wiping<br>(3 Hours)                                | NIOSH Filter<br>Membrane                     |
|                                             | Hartman             | 3-15-74 PM | Zinc        | 0.01 mg/M <sup>3</sup> | Tinning Cathodes<br>(2.5 Hours)                           | Ditto                                        |
|                                             | Minnifield          | 11-13-73   | Asbestos    | 0.36 Fibers/ml         | Fluffing Asbestos<br>(3 Hours)                            | Personnel<br>Monitor with<br>Membrane Filter |
|                                             | Thomas              | 11-14-73   | Asbestos    | 1.90 Fibers/ml         | Cutting Asbestos<br>Rope (15 Minutes)                     | Ditto                                        |
|                                             | Minnifield          | 11-26-73   | Asbestos    | 20.8 Fibers/ml         | Fluffing Asbestos<br>(15 Minutes)                         | Ditto                                        |
|                                             | Thomas              | 11-26-73   | Asbestos    | 0.09 Fibers/ml         | Packing Asbestos<br>Rope in Cells<br>( 8 Minutes)         | Ditto                                        |
|                                             | Boyd                | 11-29-73   | Asbestos    | 2.0 Fibers/ml          | Sieving Asbestos<br>Shipment Samples<br>(22 Minutes)      | Ditto                                        |
|                                             | Minnifield          | 12-12-73   | Asbestos    | 1.14 Fibers/ml         | Fluffing Asbestos<br>(15 Minutes)                         | Ditto                                        |
|                                             | Derousseau          | 12-12-73   | Asbestos    | 4.56 Fibers/ml         | Fluffing Asbestos<br>(15 Minutes)                         | Ditto                                        |
|                                             | Minnifield          | 12-17-73   | Asbestos    | 0.41 Fibers/ml         | Ditto                                                     | Ditto                                        |
|                                             | Derousseau          | 3-7-74     | Asbestos    | 9.75 Fibers/ml         | Ditto                                                     | Ditto                                        |
|                                             | Minnifield          | 3-7-74     | Asbestos    | 6.44 Fibers/ml         | Ditto                                                     | Ditto                                        |
|                                             | Cady                | 5-22-74    | Asbestos    | 3.2 Fibers/ml          | Observing Box<br>Car Unloading of<br>Asbestos (5 Minutes) | Ditto                                        |
|                                             | Riley               | 5-22-74    | Asbestos    | 1.8 Fibers/ml)         | Laborers unloading                                        | Ditto                                        |
|                                             | Bellard             | 5-22-74    | Asbestos    | 1.4 Fibers/ml)         | Box Car Shipment                                          |                                              |
|                                             | Kelley              | 5-22-74    | Asbestos    | 2.0 Fibers/ml)         | of                                                        |                                              |
|                                             | Reed                | 5-22-74    | Asbestos    | 0.17 Fibers/ml)        | Asbestos                                                  |                                              |
|                                             | Hall                | 5-22-74    | Asbestos    | 1.9 Fibers/ml )        | (15 Minutes)                                              |                                              |
|                                             | Carrier             | 6-13-74    | Asbestos    | 2.3 Fibers/ml          | Fluffing Asbestos<br>(14 Minutes)                         | Ditto                                        |

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TABLE 6 (Cont'd.)

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Area</u>                | <u>Monitored Personnel</u> | <u>Date-Time</u> | <u>Contaminant</u>                       | <u>Concentration</u>  | <u>Conditions</u>                                      | <u>Method</u>                          |
|----------------------------|----------------------------|------------------|------------------------------------------|-----------------------|--------------------------------------------------------|----------------------------------------|
| Area Sampling for Asbestos | Asbestos Rope Packing Area | 11-13-73         | Asbestos                                 | 0.04 Fibers/ml        | 5 Hours                                                | Personnel Monitor with Membrane Filter |
|                            | Diaphragm Depositing Area  | 12-12-73         | Asbestos                                 | 0.15 Fibers/ml        | 4 Hours                                                | Ditto                                  |
|                            | Ditto                      | 3-7-74           | Asbestos                                 | 0.19 Fibers/ml        | 4 Hours                                                | Ditto                                  |
|                            | Popillion                  | 7-29-74 AM       | Benzene-Soluble Coal Tar Pitch Volatiles | 2.5 mg/M <sup>3</sup> | Dipping Tar (3 Hours)                                  | PSM-1013                               |
|                            | Thibodeaux                 | 7-29-74 AM       | Ditto                                    | 2.0 mg/M <sup>3</sup> | Pouring Tar (3 Hour)                                   | Ditto                                  |
|                            | Guidry                     | 7-30-74 AM       | Carbon Monoxide                          | < 5 ppm               | Working in Cell Repair and Driving Heister (4 Hours)   | MSA Monitaire Sampler                  |
|                            | Jones                      | 7-30-74 AM       | Carbon Monoxide                          | < 5 ppm               | Driving Heister in Cell Repair and Cell Area (4 Hours) | Ditto                                  |

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LD-1121G/12

TABLE 6 - (Cont'd.)

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>ea</u>                | <u>Monitored<br/>Personnel</u>         | <u>Date-Time</u> | <u>Contaminant</u> | <u>Concentration</u> | <u>Conditions</u> | <u>Method</u>               |
|--------------------------|----------------------------------------|------------------|--------------------|----------------------|-------------------|-----------------------------|
| a Sampling<br>r Chlorine | Center of<br>Repair, near<br>Lead Pots | 7-30-74          | Chlorine           | 1 ppm                | 1 Hour            | o-Tolidine,<br>Colorimetric |
|                          | Center, near<br>Mastic Area            | 7-30-74          | Chlorine           | 0.2 ppm              | 1 Hour            | Ditto                       |
|                          | Center, near<br>Lead Pots              | 7-31-74          | Chlorine           | < 0.1 ppm            | 1 Hour            | Ditto                       |
|                          | Center, near<br>Mastic Area            | 7-31-74          | Chlorine           | < 0.1 ppm            | 1 Hour            | Ditto                       |

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LD-1121G/13

TABLE 11

OCCUPATIONAL ENVIRONMENT AIR MONITORING

| <u>Area</u>                                    | <u>Monitored Personnel</u> | <u>Date-Time</u> | <u>Contaminant</u>        | <u>Concentration</u>           | <u>Conditions</u>           | <u>Method</u>                                        |
|------------------------------------------------|----------------------------|------------------|---------------------------|--------------------------------|-----------------------------|------------------------------------------------------|
| Maintenance Personnel                          | Hayes-Welder               | 3-15-74 AM       | Copper Fume               | 0.45 mg/M <sup>3</sup>         | Welding Copper<br>(3 Hours) | Membrane<br>Filter and<br>Atomic Absorption<br>Anal. |
| Sandblasting<br>Area<br>(35 Yards<br>Downwind) |                            | 9-17-73          | Cadmium                   | < 0.06 mg/M <sup>3</sup>       |                             | Ditto                                                |
|                                                |                            |                  | Chromium                  | < 0.12 mg/M <sup>3</sup>       |                             |                                                      |
|                                                |                            |                  | Copper                    | < 0.06 mg/M <sup>3</sup>       |                             |                                                      |
|                                                |                            |                  | Lead                      | < 0.06 mg/M <sup>3</sup>       |                             |                                                      |
|                                                |                            |                  | Zinc                      | 1.52 mg/M <sup>3</sup>         |                             |                                                      |
|                                                |                            |                  | Total<br>Particulate      | 66.6 mg/M <sup>3</sup>         |                             | Midget Cascade<br>Impactor                           |
|                                                |                            |                  | Respirable<br>Particulate | 22% or<br>15 mg/M <sup>3</sup> |                             | Ditto                                                |

1 BB 0000136 1

LD-1121G/14