

TABLE I

SUMMARY OF VCM PERSONNEL DOSIMETRY RESULTSMARCH 1, 1977 - AUGUST 31, 1977

| <u>Current<br/>Sampling<br/>Frequency</u> | <u>Workforce<br/>Group</u>            | <u>No.<br/>Samples</u> | <u>Mean<br/>(PPM,VCM)</u> | <u>STD<br/>Deviation<br/>(PPM,VCM)</u> | <u>2-Sigma Upper<br/>Control Limit<br/>(PPM,VCM)</u> |
|-------------------------------------------|---------------------------------------|------------------------|---------------------------|----------------------------------------|------------------------------------------------------|
| <u>I. YEARLY</u>                          |                                       |                        |                           |                                        |                                                      |
|                                           | 1. Maint. Elect.                      | 5                      | 0.14                      | 0.08                                   | 0.29                                                 |
|                                           | 2. Maint. Machinists                  | 0                      | -                         | -                                      | -                                                    |
|                                           | 3. Maint. Painter/Carpenters          | 1                      | 0.05                      | -                                      | -                                                    |
|                                           | 4. Maint. General Helpers             | 1                      | 0.06                      | -                                      | -                                                    |
|                                           | 5. Laboratory Supervisors             | 2                      | 0.18                      | 0.13                                   | 0.44                                                 |
|                                           | 6. Vinyl Dryer Lead Operators         | 3                      | 0.11                      | 0.03                                   | 0.17                                                 |
|                                           | 7. Compound Supervisors               | 5                      | 0.27                      | 0.32                                   | 0.91                                                 |
|                                           | 8. Compound, Dry Blend Workers        | 1                      | -.13                      | -                                      | -                                                    |
| <u>II. QUARTERLY</u>                      |                                       |                        |                           |                                        |                                                      |
|                                           | 1.* Transportation Warehouse Workers  | 5                      | 0.09                      | 0.07                                   | 0.24                                                 |
|                                           | 2. Warehouse Workers                  | 2                      | 0.15                      | 0.21                                   | 0.56                                                 |
|                                           | 3. Maint. Instrument Technicians      | 2                      | 0.11                      | 0.04                                   | 0.18                                                 |
|                                           | 4. Maint. Building Attendants         | 1                      | 0.03                      | -                                      | -                                                    |
|                                           | 5. Safety Personnel                   | 3                      | 0.16                      | 0.06                                   | 0.27                                                 |
|                                           | 6. Mechanical Engineers               | 4                      | 0.12                      | 0.09                                   | 0.29                                                 |
|                                           | 7. Storekeepers & Stores Supervisor   | 5                      | 0.26                      | 0.85                                   | 1.95                                                 |
|                                           | 8. Reactor Lead Operators             | 5                      | 0.14                      | 0.11                                   | 0.36                                                 |
|                                           | 9. Vinyl Dryer Supervisors            | 7                      | 0.26                      | 0.16                                   | 0.57                                                 |
|                                           | 10. Vinyl Dryer Operators & Utilities | 7                      | 0.36                      | 0.37                                   | 1.11                                                 |
|                                           | 11. Maint. Utility Technicians        | 2                      | 0.13                      | 0.08                                   | 0.28                                                 |
|                                           | 12. Laboratory Technicians            | 6                      | 0.20                      | 0.14                                   | 0.47                                                 |
| <u>III. MONTHLY</u>                       |                                       |                        |                           |                                        |                                                      |
|                                           | 1. Yard Supervisor                    | 2                      | 0.52                      | 0.15                                   | 0.81                                                 |
|                                           | 2. Maint. Supervisors                 | 12                     | 0.14                      | 0.20                                   | 0.53                                                 |
|                                           | 3. Maint. "A" Mechanics               | 12                     | 0.19                      | 0.22                                   | 0.62                                                 |
|                                           | 4. Maint. "B" Mechanics               | 2                      | 1.09                      | 1.15                                   | 3.38                                                 |
|                                           | 5. Maint. Helpers                     | 1                      | 0.18                      | -                                      | -                                                    |
|                                           | 6.* Process Engineers                 | 9                      | 0.09                      | 0.09                                   | 0.27                                                 |
|                                           | 7. Yard Operators                     | 11                     | 0.13                      | 0.07                                   | 0.26                                                 |
|                                           | 8. Reactor Supervisors                | 13                     | 0.51                      | 0.93                                   | 2.38                                                 |
|                                           | 9. Reactor "A" Operators              | 12                     | 0.22                      | 0.22                                   | 0.66                                                 |

TABLE I  
SUMMARY OF VCM DOSIMETRY RESULTS  
MARCH 1, 1978 - MAY 31, 1978

| <u>Workforce Group</u>                   | <u>No.<br/>Samples</u> | <u>Mean<br/>(PPM,VCM)</u> | <u>Std. Deviation<br/>(PPM,VCM)</u> | <u>2-Sigma Upper<br/>Control Unit<br/>(PPM,VCM)</u> |
|------------------------------------------|------------------------|---------------------------|-------------------------------------|-----------------------------------------------------|
| <u>I. Annual Schedule</u>                |                        |                           |                                     |                                                     |
| 1. Compound Supervisors                  | 6                      | 0.23                      | 0.07                                | 0.26                                                |
| 2. Dry Blend Operators                   | 5                      | 0.12                      | 0.002                               | 0.04                                                |
| 3. Compound Operators                    | 4                      | 0.10                      | 0.00                                | 0.10                                                |
| 4. Trans. Warehouse Workers              | 3                      | 0.10                      | 0.00                                | 0.10                                                |
|                                          | <u>18</u>              |                           |                                     |                                                     |
| <u>II. Quarterly Schedule</u>            |                        |                           |                                     |                                                     |
| 1. Storeroom Supervisor                  | 2                      | 0.15                      | 0.05                                | 0.25                                                |
| 2. Lab Lead Techs                        | 4                      | 0.10                      | 0.00                                | 0.10                                                |
| 3. Lab "A" Techs                         | 9                      | 0.11                      | 0.57                                | 0.23                                                |
| 4. Warehouse Workers                     | 4                      | 0.15                      | 0.09                                | 0.32                                                |
| 5. Storekeepers                          | 3                      | 0.10                      | 0.00                                | 0.10                                                |
|                                          | <u>22</u>              |                           |                                     |                                                     |
| <u>III. Monthly Schedule</u>             |                        |                           |                                     |                                                     |
| 1. Maint. Bldg. Attendants               | 2                      | 0.05                      | 0.05                                | 0.15                                                |
| 2. Maint. Util. Techs                    | 11                     | 0.33                      | 0.47                                | 1.28                                                |
| 3. Maint. Instr. Techs                   | 13                     | 0.12                      | 0.08                                | 0.29                                                |
| 4. Maint. Painters &<br>Machinist        | 9                      | 0.14                      | 0.13                                | 0.39                                                |
| 5. Maint. Electricians                   | 10                     | 0.09                      | 0.03                                | 0.15                                                |
| 6. Maint. Supervisors                    | 24                     | 0.77                      | 2.90                                | 6.58                                                |
| 7. Maint. "A" Mechanics                  | 54                     | 0.87                      | 5.38                                | 11.62                                               |
| 8. Maint. "B" Mechanics                  | 8                      | 0.19                      | 0.27                                | 0.73                                                |
| 9. Maint. Helpers                        | 7                      | 0.09                      | 0.04                                | 0.16                                                |
| 10. Yard Operators                       | 13                     | 1.69                      | 3.26                                | 8.20                                                |
| 11. Yard Supervisor                      | 4                      | 0.08                      | 0.04                                | 0.16                                                |
| 12. Vinyl Shift Supervisors              | 16                     | 0.17                      | 0.12                                | 0.41                                                |
| 13. Vinyl LR Lead Oper.                  | 12                     | 0.29                      | 0.44                                | 1.17                                                |
| 14. Vinyl LR Operators                   | 23                     | 1.77                      | 3.69                                | 9.14                                                |
| 15. Vinyl Dryer Lead Oper.               | 8                      | 0.49                      | 1.55                                | 1.59                                                |
| 16. Vinyl Dryer Util., Oper.,<br>Helpers | 38                     | 0.23                      | 0.35                                | 0.94                                                |
| 17. Process Engineers                    | 15                     | 0.11                      | 0.03                                | 0.18                                                |
| 18. Safety                               | 11                     | 0.16                      | 0.14                                | 0.43                                                |
| 19. Mechanical Engineers                 | 22                     | 0.12                      | 0.10                                | 0.31                                                |
| 20. Plant Mgr, Supt.                     | 6                      | 0.35                      | 0.36                                | 1.06                                                |
| 21. Dev. Lab. Techs.                     | 5                      | 0.17                      | 0.12                                | 0.40                                                |
| 22. Lab Supervisors                      | 10                     | 0.10                      | 0.00                                | 0.10                                                |
|                                          | <u>321</u>             |                           |                                     |                                                     |

TABLE I  
ANALYSIS OF 1979 VCM DOSIMETRY

| <u>JOB CLASSIFICATION</u>                                                               | <u>S</u> | <u><math>\bar{X}</math></u> | <u><math>\sigma</math></u> | <u>K</u> | <u>O</u> |
|-----------------------------------------------------------------------------------------|----------|-----------------------------|----------------------------|----------|----------|
| 1. Vinyl Oper. Superintendent,<br>Supervisor, Relief Supervisor,<br>Operations Engineer | 19       | .20                         | .21                        | 11       |          |
| 2. Vinyl Shift Supervisor                                                               | 20       | .30                         | .21                        | 10       |          |
| 3. Chief Leads                                                                          | 20       | 1.40                        | 3.09                       | 10       | 20       |
| 4. Vinyl Lead Operators                                                                 | 45       | .50                         | 1.69                       | 9        | 4        |
| 5. Vinyl Utilities                                                                      | 12       | .23                         | .29                        |          | 8        |
| 6. Yard Supervisor, Operators                                                           | 27       | 1.63                        | 6.18                       | 4        | 7        |
| 7. Vinyl Operators                                                                      | 68       | .73                         | 1.21                       | 7        | 19       |
| 8. Maintenance Supervisors                                                              | 25       | .31                         | .50                        | 4        | 8        |
| 9. All Maint. Mechanics, Helpers,<br>Painters, Utility Techs.                           | 45       | .40                         | .89                        | 10       | 6        |
| 10. Process & Mechanical Engineers                                                      | 7        | .07                         | .12                        |          |          |
| 11. Safety                                                                              | 3        | .03                         | .06                        |          |          |
| 12. E & I Supervisor & Workers                                                          | 11       | .14                         | .11                        |          |          |
| 13. Compound Superintendent & Supervisors                                               | 7        | .10                         | .22                        | 14       |          |
| 14. Storeroom Supervisor & Workers                                                      | 7        | .03                         | .05                        |          |          |
| 15. Lab Supervisors & Workers                                                           | 15       | .13                         | .24                        |          |          |

S = No. samples. NOTE: In most cases, for last 6 months of year - in others for entire year if needed to increase sample size.

$\bar{X}$  = Average (ppm) sample result.

$\sigma$  = Standard deviation (ppm)

K = No. of results greater than the "Action Level" (0.5 ppm) but less than or equal to the permissible exposure limit (1.0 ppm) - per 100 samples of the job classification(s).

O = No. of results greater than 1.0 ppm - per 100 samples of the job classification.

A

TABLE I  
SUMMARY OF 1981 VCM DOSIMETRY RESULTS\*

| <u>Job Categories</u>              | <u>No.<br/>Samples</u> | <u><math>\bar{x}</math><br/>Average<br/>(ppm)</u> | <u>S<br/>Standard<br/>Deviation<br/>(ppm)</u> | <u>% &gt;<br/>1 ppm</u> | <u>Upper<br/>Confidence<br/>Limit<br/>(<math>\bar{x} + 2*S</math>)</u> |
|------------------------------------|------------------------|---------------------------------------------------|-----------------------------------------------|-------------------------|------------------------------------------------------------------------|
| Reactor Operator                   | 87                     | 3.5                                               | 17.0                                          | 24                      | 37.5                                                                   |
| General Mechanic                   | 284                    | 3.7                                               | 5.6                                           | 5                       | 15.0                                                                   |
| Chief Operator                     | 47                     | 1.5                                               | 2.8                                           | 26                      | 7.2                                                                    |
| Vinyl Operations Engineer          | 9                      | 0.4                                               | 0.9                                           | 11                      | 2.1                                                                    |
| * Vinyl Shift Supervisor           | 54                     | 0.4                                               | 0.9                                           | 9                       | 2.1                                                                    |
| Lead Operator                      | 92                     | 0.2                                               | 0.9                                           | 2                       | 2.0                                                                    |
| Yard Supervisor                    | 8                      | 0.4                                               | 0.7                                           | 13                      | 1.8                                                                    |
| Maintenance Helper                 | 37                     | 0.4                                               | 0.7                                           | 3                       | 1.7                                                                    |
| Instrument Tech.                   | 6                      | 0.4                                               | 0.6                                           | 17                      | 1.6                                                                    |
| Vinyl Operations Supervisor        | 2                      | 0.6                                               | 0.5                                           | 0                       | 1.5                                                                    |
| Dryer Operator                     | 88                     | 0.2                                               | 0.4                                           | 1                       | 1.0                                                                    |
| Utility Technician                 | 44                     | 0.2                                               | 0.4                                           | 0                       | 1.0                                                                    |
| Painter-Carpenter-Insulator        | 11                     | 0.3                                               | 0.3                                           | 0                       | 0.9                                                                    |
| Maintenance Supervisor             | 32                     | 0.2                                               | 0.2                                           | 3                       | 0.6                                                                    |
| Safety Supervisor                  | 1                      | 0.6                                               | 0                                             | 0                       | 0.6                                                                    |
| Yard Operator                      | 49                     | 0.2                                               | 0.2                                           | 0                       | 0.5                                                                    |
| Lead Warehouse Worker              | 2                      | 0.2                                               | 0.1                                           | 0                       | 0.5                                                                    |
| Dryer Utility                      | 45                     | 0.2                                               | 0.1                                           | 0                       | 0.4                                                                    |
| Lab Technician                     | 12                     | 0.1                                               | 0.1                                           | 0                       | 0.3                                                                    |
| Lab Lead Technician                | 3                      | 0.2                                               | 0.1                                           | 0                       | 0.3                                                                    |
| Mechanical Superintendent          | 10                     | 0.1                                               | 0.1                                           | 0                       | 0.3                                                                    |
| Process Engineer                   | 12                     | 0.1                                               | 0.1                                           | 0                       | 0.2                                                                    |
| Safety Director                    | 1                      | 0.2                                               | 0                                             | 0                       | 0.2                                                                    |
| Receiving Lead                     | 1                      | 0.2                                               | 0                                             | 0                       | 0.2                                                                    |
| Maintenance Superintendent (Mech.) | 11                     | 0.1                                               | 0.03                                          | 0                       | 0.2                                                                    |
| Storekeeper                        | 3                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Contract Supervisor                | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Vinyl Operations Supt.             | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Lab Supervisor                     | 6                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |

**TABLE I (Continued)**

**SUMMARY OF 1981 VCM DOSIMETRY RESULTS\***

| <u>Job Categories</u>          | <u>No.<br/>Samples</u> | <u><math>\bar{x}</math><br/>Average<br/>(ppm)</u> | <u>S<br/>Standard<br/>Deviation<br/>(ppm)</u> | <u>% &gt;<br/>1 ppm</u> | <u>Upper<br/>Confidence<br/>Limit<br/>(<math>\bar{x} + 2*S</math>)</u> |
|--------------------------------|------------------------|---------------------------------------------------|-----------------------------------------------|-------------------------|------------------------------------------------------------------------|
| Electrician                    | 3                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Compound Operations Supervisor | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Compound Operations Supt.      | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Plant Chemist                  | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| * Dev. Technician              | 4                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Maint. Supt. (I & E)           | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Plant Supt.                    | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Mechanical Engineer            | 7                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Draftsman                      | 4                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Plant Manager                  | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Compound Shift Supervisor      | 5                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |
| Safety Inspector               | 1                      | 0.1                                               | 0                                             | 0                       | 0.1                                                                    |

\* Note: All dosimeters measure concentration without regard to the use of respirators.

TABLE VI

SUMMARY OF 1980 VCM DOSIMETRY RESULTS

| <u>Job Categories</u>             | <u>No.<br/>Samples</u> | <u><math>\bar{x}</math><br/>Average<br/>(PPM)</u> | <u>S<br/>Standard<br/>Deviation<br/>(PPM)</u> | <u>%<br/>1 PPM</u> | <u>Upper<br/>Confidence<br/>Limit<br/>(<math>\bar{x} + 2 \times S</math>)</u> |
|-----------------------------------|------------------------|---------------------------------------------------|-----------------------------------------------|--------------------|-------------------------------------------------------------------------------|
| Vinyl Operator                    | 131                    | 2.7                                               | 3.6                                           | 5                  | 9.9                                                                           |
| Mechanical Helper                 | 9                      | 2.3                                               | 6.4                                           | 11                 | 15.1                                                                          |
| Vinyl Shift Supervisor            | 54                     | 0.4                                               | 1.0                                           | 4                  | 2.4                                                                           |
| Vinyl Utility                     | 50                     | 0.4                                               | 0.9                                           | 4                  | 2.2                                                                           |
| Vinyl Chief Lead                  | 47                     | 0.4                                               | 0.7                                           | 6                  | 1.8                                                                           |
| Yard Operator                     | 54                     | 0.3                                               | 1.1                                           | 6                  | 2.5                                                                           |
| Maintenance Supervisor            | 34                     | 0.3                                               | 0.7                                           | 6                  | 1.7                                                                           |
| Maintenance Superintendent (I&E)  | 3                      | 0.3                                               | 0.5                                           | 0                  | 1.3                                                                           |
| "A" Mechanics                     | 276                    | 0.3                                               | 2.0                                           | 4                  | 4.3                                                                           |
| "B" Mechanics                     | 19                     | 0.2                                               | 0.4                                           | 5                  | 1.0                                                                           |
| Yard Supervisor                   | 10                     | 0.2                                               | 0.3                                           | 0                  | 0.8                                                                           |
| Utility Tech.                     | 28                     | 0.1                                               | 0.2                                           | 0                  | 0.5                                                                           |
| Vinyl Operations Engineer         | 11                     | 0.1                                               | 0.2                                           | 0                  | 0.5                                                                           |
| Vinyl Lead Operator               | 88                     | 0.1                                               | 0.2                                           | 0                  | 0.5                                                                           |
| Casual Laborer                    | 8                      | 0.1                                               | 0.2                                           | 0                  | 0.5                                                                           |
| Process and Mechanical Engineer   | 2                      | 0.1                                               | 0.1                                           | 0                  | 0.3                                                                           |
| Laboratory Lead Tech.             | 5                      | 0.1                                               | 0.1                                           | 0                  | 0.3                                                                           |
| Painter/Insulator/Carpenter       | 9                      | 0.1                                               | 0.1                                           | 0                  | 0.3                                                                           |
| Instrumentmen & Electricians      | 18                     | 0.1                                               | 0.1                                           | 0                  | 0.3                                                                           |
| Maintenance Planner               | 4                      | 0.1                                               | 0.1                                           | 0                  | 0.3                                                                           |
| Lab "A" Tech.                     | 11                     | 0.1                                               | 0.1                                           | 0                  | 0.3                                                                           |
| Storekeeper                       | 3                      | 0.1                                               | 0                                             | 0                  | 0.1                                                                           |
| Compound Shift Supervisor         | 3                      | 0                                                 | 0.1                                           | 0                  | 0.2                                                                           |
| Vinyl Operations Supervisor       | 6                      | 0                                                 | 0.1                                           | 0                  | 0.2                                                                           |
| Mechanical Supt.                  | 6                      | 0                                                 | 0.1                                           | 0                  | 0.2                                                                           |
| Lab Shift Supervisor              | 4                      | 0                                                 | 0.1                                           | 0                  | 0.2                                                                           |
| Maintenance Supt. (Mech.)         | 13                     | 0                                                 | 0.1                                           | 0                  | 0.2                                                                           |
| Safety Director, Supv., Inspector | 5                      | 0                                                 | 0.1                                           | 0                  | 0.2                                                                           |
| Vinyl Operations Supt.            | 2                      | 0                                                 | 0                                             | 0                  | 0                                                                             |
| Compound Operations Supv., Supt.  | 2                      | 0                                                 | 0                                             | 0                  | 0                                                                             |
| Receiving Lead                    | 1                      | 0                                                 | -                                             | 0                  | 0                                                                             |
| Stores Supv.                      | 1                      | 0                                                 | -                                             | 0                  | 0                                                                             |
| Quality Control Supv.             | 1                      | 0                                                 | -                                             | 0                  | 0                                                                             |

## ROUTINE DOSIMETRY SAMPLING FREQUENCY PLAN

### I. VCM

#### A. Monthly Samples - One monthly sample of each employee exposure in each of the following job groups:

1. Vinyl Shift Supervisor
2. Chief Operator
3. Lead Operator
4. Reactor Operator
5. Dryer Operator
6. Dryer Utility
7. General Helper
8. Yard Operator
9. Yard Supervisor
10. Vinyl Operations Engineer
11. Vinyl Operations Supervisor
12. Vinyl Operations Superintendent
13. Mechanical Superintendent
14. Maintenance Superintendent (Mech.)
15. Maintenance Supervisor (I&E)
16. Maintenance Area Supervisor
17. Utilities Supervisor
18. Maintenance Planner
19. General Mechanic
20. Electrician
21. Instrument Technician
22. Painter-Insulator-Carpenter
23. Utility Technician
24. Maintenance Helper

#### B. Yearly Samples - One yearly sample from each of the following job groups:

1. Lead Warehouse Worker
2. Lab Lead Technician
3. Lab Technician
4. Receiving Lead
5. Storekeeper
6. Contract Supervisor
7. Safety Director
8. Safety Supervisor
9. Safety Inspector
10. Process Engineer
11. Lab Shift Supervisor\*
12. Compound Shift Supervisor
13. Compound Operations Supervisor
14. Compound Operations Superintendent
15. Chief Plant Chemist
16. Development Technician
17. Plant Superintendent
18. Mechanical Engineer
19. Draftsman
20. Plant Manager
21. Manufacturing Chemist

\* JOB ELIMINATED