



E. I. DU PONT DE NEMOURS & COMPANY  
INCORPORATED

DYE WORKS

MAIL, TELEGRAPHIC AND EXPRESS ADDRESS  
PENNS GROVE, N. J.

FREIGHT ADDRESS  
CARNEY'S POINT, N. J.

CC: Mr. L. S. Munson  
Dr. Wm. Kirk  
Dr. G. H. Gehrman  
Mr. P. D. Heuser

November 8, 1939

Mr. J. L. Stecher  
Organic Chemicals  
Wilmington, Delaware

Tetra Ethyl Lead Hazard

For some time I have been concerned about the condition of health of the men employed in the Tetra Ethyl Lead Area.

We have known for years that there are certain locations in the area where absorptions are greater than other locations.

We have noted that many of the men employed on the still floor develop symptoms of absorption and even symptoms of intoxication.

In order to develop specific facts in connection with the health picture of the individuals employed in the Tetra Ethyl Lead Area we have accumulated information and have tabulated this information covering one year.

Part of this information was used in a report we recently wrote discussing conditions on the third floors of the buildings. As we pointed out in that report some further protective means are necessary to prevent the development of cases of lead poisoning.

In our attempt to control the situation in the lead area we have employed the following means:

1. The clinical examination of each workman every three weeks,
2. Aided by laboratory tests which have included smears of blood for the determination of stipple cells

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3. A count of the red and white blood cells to determine the development of anemia.
4. excretion tests upon men performing each type of task required in the area.

This latter work has been performed by Dr. R. A. Lebow in the Kettering Laboratory at Cincinnati, Ohio.

In addition, as you know, the buildings have been ventilated, each step in the operation has been considered in detail and specific instructions have been issued to operating personnel and to Mechanical personnel who perform up-keep work.

At the same time analyses are run continuously in varying locations giving the lead air content.

Clinical information obtained by the methods we have enumerated above indicate that in spite of every effort that has been taken to date we have not accomplished our objective, namely the prevention of lead exposure.

When we discuss lead air analyses it is not sufficient to note that the average lead air content is within a safe working concentration since at no time have the average air analyses in the buildings been within the range that is considered unsafe by authorities on the subject of lead poisoning. However, there are many times when the lead air content is above the normal limit.

We have shown previously that from routine air examinations there were many times during the past year when the concentration was above a safe working level.

The attached table shows the number of times during the past year that the air analyses for various locations in the lead area were above a safe working level.

In the Blender in particular the concentration at various times has been three times what is considered safe. Hence, individuals employed in those locations during those periods could not help but absorb sufficient lead to produce symptoms of intoxication. At the same time in the Blender there are individuals who have shown by clinical examination and from the laboratory and excretion tests that they have severe lead absorption and in one or two instances lead intoxication.

As a result of these findings something should be done to correct the condition in the present blender.

There is no location in the entire lead area where we do not have clinical evidence of rather severe lead absorption.

We have charted in the attached table not only the high air analyses but also the number of men in each location who have shown objective and subjective symptomatology as well as high excretion tests.

We have pointed out in the last column in the table the number of men who have a combination of these findings, in other words the group listed in the last column could all be diagnosed as cases of mild lead poisoning. Should this diagnosis be made we could not refute it.

Since this picture discloses the fact that there are twenty-four men who have symptoms of mild lead intoxication we believe consideration should be given to this subject in order to more adequately protect the employees of this area.

DYE WORKS MEDICAL DEPARTMENT

BY: E. E. Evans M.D.

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|                   | Times Above Allowable Limit | Number of Men with Objective Symptoms | Number of Men with Subjective Symptoms | Number of Men with High Excretions | Number of Men showing all Positive Findings |
|-------------------|-----------------------------|---------------------------------------|----------------------------------------|------------------------------------|---------------------------------------------|
| 3rd Floor         |                             |                                       |                                        |                                    |                                             |
| B                 | 25                          | 8                                     | 6                                      | 2                                  | 3                                           |
| C                 | 8                           | 9                                     | 6                                      | 3                                  | 2                                           |
| D                 | 10                          | 10                                    | 5                                      | 2                                  | 2                                           |
| E                 | 22                          | 16                                    | 7                                      | 3                                  | 3                                           |
| 4th Floor         |                             |                                       |                                        |                                    |                                             |
| B                 | 13                          | 6                                     | 4                                      | 1                                  | 1                                           |
| C                 | 6                           | 7                                     | 4                                      | 2                                  | 0                                           |
| D                 | 10                          | 9                                     | 5                                      | 2*                                 | 1                                           |
| E                 | 8                           | 9                                     | 4                                      | 2                                  | 1                                           |
| 5th Floor         |                             |                                       |                                        |                                    |                                             |
| B                 | 12                          | 9                                     | 2                                      | 1                                  | 0                                           |
| C                 | 8                           | 12                                    | 1                                      | 4                                  | 0                                           |
| D                 | 7                           | 10                                    | 6                                      | 2                                  | 2                                           |
| E                 | 10                          | 12                                    | 6                                      | 4                                  | 2                                           |
| Furnace           |                             |                                       |                                        |                                    |                                             |
| B                 | 26                          | 1                                     | 1                                      | 1                                  | 1                                           |
| C                 | 33                          | 3                                     | 3                                      | 2                                  | 2                                           |
| D                 | 26                          | 4                                     | 3                                      | 3                                  | 2                                           |
| E                 | 21                          | 2                                     | 0                                      | 1                                  | 0                                           |
| Blender           | 166                         | 12                                    | 9                                      | 2                                  | 2                                           |
| * Not represented |                             |                                       |                                        |                                    |                                             |