

measured doses of aldrin. Most of the toxicant was recovered from the liver, the kidney and fat tissue. Dieldrin exhibits an LD_{50} to dogs within the range of 65 to 95 mg. per kilogram of body weight.⁴

EXAMINATION OF WORKERS

This survey consisted of a study of 34 persons engaged in the manufacture of all these products. Of these 34, only 22 were directly exposed during the manufacturing process. Although exposure was mainly by inhalation, all three of the materials were known to come into contact with the skin. Rubber gloves had been furnished all the men, and they had been told to wash off with soap and water any material with which they might come into contact. These instructions were not enforced, and it is impossible to report how well precautions were maintained.

Table 1 shows the ages of the men, the duration of their employment and the area in which they worked. Since some of the men had not received preemployment physical examinations, careful inquiry concerning the state of their health at the time of their employment was deemed necessary at the initiation of this study. In December 1948 routine urinalyses and chest roentgenograms had been made for 27 of the men. There had been no positive findings in any of the men of this group. The histories of the other seven men did not suggest abnormalities.

The clinical and laboratory investigation included the following:

1. A complete history and physical examination, including a chest roentgenogram.
2. Urinary dilution and concentration tests by the Mosenthal modification.
3. Routine urinalysis.
4. Hemoglobin determination by the photoelectric method.
5. Determination of the sedimentation rate by the Wintrobe method.
6. Complete blood count.
7. Porphyrin determination by a modification of Watson's short method.⁶

A complete neurological examination was carefully carried out because it was felt reasonable to suppose that these compounds might prove similar in action to other aliphatic and aromatic halogenated hydrocarbons which are known to affect the central nervous system. A study of the optic nerves and disks was made. Visual acuity and visual fields were determined by standard methods. Cranial nerves were tested for any deviations from the normal, as were the neuromuscular functions of the remainder of the body.

Because of the possibility that these compounds might have a toxic effect on the liver, each person was questioned closely concerning gastrointestinal upsets, jaundice, dark urine, changes in color of the stools and pain or tenderness in the right upper quadrant of the abdomen. Urinary porphyrin determinations were done because it is known that in certain pathological conditions there is an increase in porphyrin excretion. The exact physiological responses which produce this increase in porphyrins is not entirely clear. Watson,⁷ however, has suggested that the

6. de Langen, C. D., and ten Berg, J. A. G.: Porphyrin in the Urine as a First Symptom of Lead Poisoning, *Acta med. Scandinav.* **130**:37, 1948.

7. Watson, C. J.: Concerning the Naturally Occurring Porphyrins: The Isolation of Coproporphyrin I from Urine in a Case of Cinchophen Cirrhosis, *J. Clin. Investigation*, **14**:106, 1935.