

In the period between Jan. 1, 1948 and Aug. 31, 1949 there were 49 cases of organic phosphate poisoning reported to the State Department of Public Health in California. One case was fatal. Three deaths due to parathion poisoning in other parts of the country were reported by Hamblin in May 1949, and since that time the authors have had reports of two other fatalities outside California.

The principle mode of action of the organic phosphates is the inactivation or destruction of the enzyme cholinesterase, producing a cholinergic action in mammals. The muscarine-like effect is the underlying cause of the multitude of symptoms.

The authors give a tabulated summary of data regarding cases of parathion poisoning reported to the California health department. They also present case histories. Death in acute poisoning may be due to any one of the following mechanisms: (1) bronchial constriction with an outpouring of mucous secretions resulting in mechanical asphyxiation; (2) central nervous system stimulation and irreversible depression; (3) stimulation and eventual depression of neuromuscular junctions; (4) accidents occurring as a result of the visual or the mental impairment.

Atropine is a specific therapeutic agent against the parasympathetic stimulation. Large doses (1 to 2 mg.) should be administered early and repeated frequently as indicated by the clinical picture. Postural drainage and suction, if available, should be used to remove the excess bronchial secretions and maintain a patent airway. Artificial respiration should be employed if breathing has ceased, and the concomitant use of oxygen may be life saving.

In discussing preventive measures, the authors stress that persons handling the substance should know about the toxicity. Contact with the bare skin must be avoided, but if it should accidentally happen, the parathion must be thoroughly washed off. Workmen should be provided with freshly laundered coveralls and should wear fresh clothing each day, including socks and underwear. In addition, sprayers or others who are likely to be drenched with the chemical should be provided with a cellophane cape and hat or other liquid-repellent garment, as ordinary clothing will prove to be merely a reservoir for further absorption. Inhalation should be avoided by use of a chemical cartridge respirator. An added safeguard is to avoid prolonged exposure.

To date, no cases of poisoning due to ingestion of food sprayed with these materials have occurred. It is recommended that there be at least a 30 day interval between application of parathion and harvesting of the crop.

#### TOXICITY TO MICE OF CHLORDAN VAPORS AND SOLUTIONS ADMINISTERED CUTANEOUSLY.

HUBERT FRINGS and JOSEPH E. O'TOUSA, *Science* **111**:658, 1950.

Mice breathing a low concentration of chlordan vapor showed, after a few weeks, a loss of activity and muscular coordination, although weight gain and appetite were normal. However, half of them died before the fifteenth week, and all were dead in 16 weeks. Necrosis of the liver was found. These mice were normal in response to the audiogenic seizure test up to the ninth week; then susceptibility rose sharply. Mice breathing air saturated with chlordan immediately ceased feeding and drinking and huddled together. They apparently were blind after a few hours and lost all power of coordination. All died in four days when exposed continuously. Odorless kerosene, applied cutaneously, caused loss of fur, but no dermatitis or liver damage. Mice receiving 0.01 ml. of 2 per cent chlordan-kerosene solution daily for 5 days per week became distinctly excitable and hard to handle after about three weeks, although weight gain was normal and appetite was unimpaired. Of the 16 so treated, 7 died before the end of the experiment (20 weeks). Autopsy showed typical liver damage. These mice were much more subject to audiogenic seizures than normal mice. There was no correlation between liver damage and seizures. Mice receiving 0.04 ml. of 2 per cent wettable powder suspension of chlordan for five days per week likewise became excitable after three weeks, but gained weight. Of the 16 in the group, 9 died before the end of the experiment and autopsy showed typical liver damage. The susceptibility to audiogenic seizures was also increased, but there was no correlation to liver damage. This test shows promise as a means of detecting early intoxication, as it indicates damage to the nervous system before clinical symptoms appear. Chlordan may have value as a rodenticide.

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