

SKIN TESTS WITH ETHYL.

LEAD WITHSTANDS WASHING.

61 PER CENT. ABSORBED IN 5 MINUTES.

The following is the fourth section of the medical report on ethyl petrol which has been prepared for "The Daily Mail" by Dr. Myer Coplans, D.S.O., O.B.E., the eminent research worker. It is based on his own personal experiments and data supplied by the Research Association of British Motor and Allied Manufacturers, who carried out a scientific analysis of exhaust gases from motor engines.

The first, second, and third sections were published on Monday, Tuesday, and yesterday.

By DR. MYER COPLANS, D.S.O.

With regard to the action of ethyl petrol, special interest attaches to the report by Dr. Frederick B. Flynn who, on behalf of the Columbia University, carried out at the request of the Medical Committee of the Ethyl Gasoline Corporation an investigation as to the following risks:—

1. The possible hazard that might arise from splashing the ethyl gasoline (1,000 to 1 mixture) on the person; or from the cleansing of the hands or clothes by the mechanic or by the housewife; or while adjusting the carburettor or cleaning out the gasoline line or tank, etc.
2. The possible danger from the inhalation of ethyl gasoline fumes from spillage in the garage and other places when vapourisation may take place.

LEAD STORED IN BODY.

The results of the investigation, which was carried out on animals, bear out those that have already been described in similar circumstances by observers using various lead compounds and, in addition, it is plain that animals exposed to skin applications of ethyl petrol will store lead. He concludes:

The fact to bear in mind is that there is no doubt that a storage of lead takes place under exposure. Lead stored in the body constitutes a potential lead poisoning. The same observations that can be made about animals receiving skin applications can be made on the animals that were exposed to the fumes of dilute ethyl gasoline.

It is of significance that there is a continuous storage of lead taking place in the animals, no matter whether it is by absorption through the skin or by inhalation. What is of special significance, or what seems so to us, is the fact that the animals in the gas chamber seem to show the effects more quickly than those which received skin applications. The dilution does not seem to make any difference except for the longer time necessary to accumulate the same quantity of lead.

Two persons who followed the work since the beginning and who had taken precautions, knowing the poisonous nature of the compound, have stored lead as shown by examination of the excretion from the bowel and kidney.

DR. FLYNN'S COMMUNICATION.

Dr. Flynn, writing to me on March 21, 1928, from the Department of Physiology, College of Physicians and Surgeons, Columbia University, New York, states the following:—

In this country we have made several studies as to the statistics of abortions, miscarriages, and sterility among lead workers. My own unpublished studies indicate, and confirm the observations of others, that the organs themselves are not hurt, but that the effect is on the cell itself.

If you take the animal away from the

lead exposure before conception, the mother will come to full term and the offspring will be normal. This is in accord with our records among painters and other lead workers who contract lead poisoning in mild form.

My own work indicates that with very small doses there are apparently no ill effects in the first generation from one or more leaded parents. But if the offspring is given the same small exposure, the effect is very apparent in the second and third generations. In fact, we have considerable trouble in getting enough animals to pair off. This observation holds in spite of the fact that the animals are given the proper food to provide the vitamins required.

If the mother is leaded, you will always find lead in the foetus and in the baby animals. To my thinking, this shows one of the dangers that exists from our so-called non-industrial lead exposures.

EXPERIMENTS.

The following experiments which I have carried out with ethyl petrol indicate some of its dangers.

1. Skin absorption test (personal). (a) Ethyl petrol was poured on to the skin

of the arm and allowed to evaporate. Immediately on drying, the patch of skin was well rubbed with a piece of linen saturated with a known quantity of kerosene.

(b) The experiment was repeated on another skin area, but cleansing of the skin was delayed until five minutes' interval had elapsed after the evaporation was completed and the skin had apparently become dry.

Two blank tests were carried out for the estimation of lead in the linen and kerosene used.

Two control experiments were also carried out at blood heat, lead-free glazed porcelain being substituted for the area of skin on which the ethyl petrol was allowed to evaporate.

Result: The skin of the arm had absorbed .54 milligrams (49 per cent.) of the lead tetraethyl present in the ethyl petrol applied (1cc.) immediately on drying and .67 milligrams (61 per cent.) in 5 minutes.

Washing the skin with kerosene to the extent indicated appears to be an ineffectual measure for the purpose of removing contamination of lead tetraethyl caused by contact with ethyl petrol.

ETHYL ON THE SKIN

WASHING WITH OIL INEFFECTIVE.

The fourth instalment of the report on ethyl petrol, prepared on behalf of *The Daily Mail* by Dr. Myer Coplans, D.S.O., and published to-day in Page 6, deals with experiments to discover the effects of washing the skin after this petrol has been allowed to dry upon it.

Points are: Ethyl petrol was poured on to the skin of the arm and allowed to evaporate. Immediately on drying the patch of skin was well rubbed with a piece of linen saturated with a known quantity of kerosene.

Result: The skin of the arm had absorbed .54 milligrams (49 per cent.) of the lead tetraethyl present in the ethyl petrol applied (1cc.) immediately on drying.

Washing the skin with kerosene to the extent indicated appears to be an ineffectual measure for the purpose of removing contamination of lead tetraethyl caused by contact with ethyl petrol.

The final instalment of Dr. Coplans's report will be published to-morrow.

No experiments on animals were carried out by Dr. Coplans during his investigations for *The Daily Mail*. The references in his report relate to the experiments of other authorities.

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