

The vitamin B₆ concentration in ovaries of cod thus increases 100–150 times during the reproductive or regenerative cycle. If the results are compared with the values reported from fish and fish products⁵, however, it may be noted that this increase is from very small concentrations up to values somewhat above those in other organs.

Vitamin B₆ as pyridoxal phosphate participates in the activation of amino-acids and amines, and it is chiefly the reactions of α -amino-acids which are dependent on this factor⁶. Our present knowledge of the biochemistry of morphogenesis permits the discussion of only a few steps in the processes of protein synthesis⁷. The first of these steps actually involves the activation of α -amino-acids. Thus, a direct relation between vitamin B₆ and the processes of morphogenesis of the ovaries in cod seems to be indicated.

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Hepatotoxic Effect of Tri- and Tetra-chlorethylene on Mice

Tri- and tetra-chlorethylene have wide usage industrially as degreasing agents. During recent years tetrachlorethylene has to some extent replaced trichlorethylene, in addition to other reasons, because of the belief that tetrachlorethylene is less toxic^{1,2}. However, opinions are controversial on this topic, especially with reference to liver toxicity³.

In order to investigate the effect of tri- and tetra-chlorethylene on the liver, groups of albino mice were exposed to various concentrations in the air of these respective compounds. Each group of ten animals was given a single 4-hr. exposure to each concentration. Animals were also exposed in the same manner to chloroform, which is known to give definite liver necrosis. The control group was exposed to air only. The animals were killed on the third day. The presence of liver fat was determined histologically and assayed quantitatively by acetone-hexane extraction. In addition, blood serum ornithine carbamyl transferase activity was determined. A rise in activity is specific for liver damage⁴.

Fig. 1 shows that trichlorethylene produced no (or only slight) histologically detectable fatty infiltration of the liver even at 6,400 p.p.m. (two animals died at this exposure; LD_{50} = 8,450 p.p.m.⁵). Tetrachlorethylene caused fatty infiltration at the low level of 400 p.p.m., but necrosis of the liver cells could not be detected. With chloroform fatty infiltration was found histologically at 200 p.p.m. and necrosis at 800 p.p.m. Trichlorethylene did not produce any significant increase in the amount of extractable liver fat (Fig. 2), thereby confirming the histological findings. Tetrachlorethylene, as well as chloroform, caused an

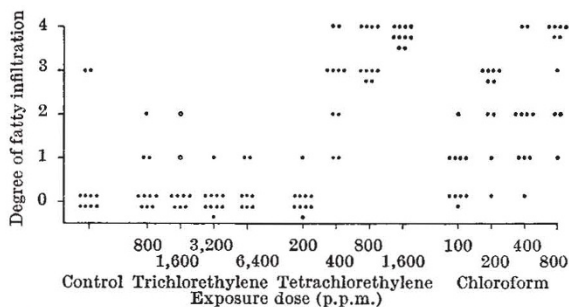


Fig. 1. Histologically visible liver fatty infiltration in control mice and in mice following exposure to trichlorethylene, tetrachlorethylene or chloroform

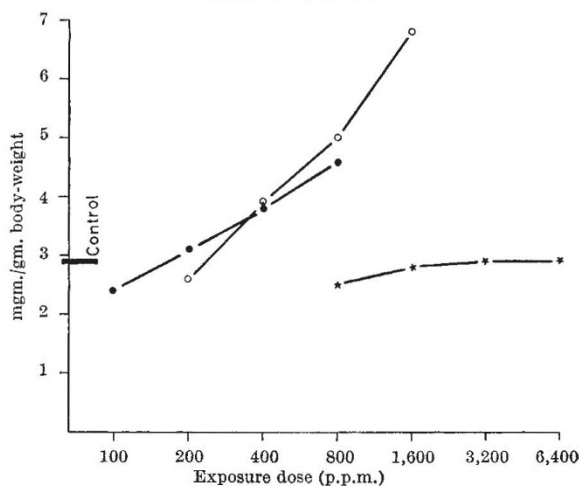


Fig. 2. Acetone-hexane fat extraction from livers of exposed mice. Each point in the figure represents the mean of 10 observations. ●, Chloroform; ○, tetrachlorethylene; *, trichlorethylene

increase of the extractable liver fat with increasing concentrations of the agents in the air (Fig. 2). Elevation of serum ornithine carbamyl transferase activity was found only after exposure to chloroform.

From the results of the present investigation trichlorethylene seemed to be less dangerous to the liver than tetrachlorethylene.

Plaa *et al.*² found, following a single subcutaneous injection in mice, that tetrachlorethylene affected the liver less than trichlorethylene. An explanation for the apparent discrepancy between their results and ours is probably the different routes of administration used. This emphasizes the importance of simulating the route of exposure in the investigations with that in the actual work condition, in order to obtain more realistic information about the health hazards involved. From the point of view of industrial hygiene, the toxicity of these agents by injection is of less importance, since the usual route is by inhalation.

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