

ESTABLISHED 1866

LEE S. SMITH & SON MANUFACTURING CO.

DENTAL PRODUCTS

7325 PENN AVENUE

PITTSBURGH, PENNA., U.S.A.

June 12, 1934.

Dr. Robert E. Kehoe,
Kettering Laboratory,
Department of Physiology,
University of Cincinnati,
Cincinnati, Ohio.

Dear Doctor Kehoe:

We are distributors of a denture base material manufactured by the Carbide and Carbon Chemicals Corporation (a subsidiary of Union Carbide and Carbon) from the thermoplastic resin "Vinylite". This, as you may know, is a polymerized compound of vinyl chloride and vinyl acetate. Over a period of three years in actual use no toxic effect has been observed.

An improvement is contemplated which will involve the incorporation of one per cent of lead stearate in the resin. Knowing the present-day suspicion of materials which contain lead, we do not care to proceed with this work until we have a definite and authoritative opinion that this resin will have no harmful physiological effect.

The writer sought the advice of Mr. William P. Yant, Superintendent of the Pittsburgh Experiment Station of the U. S. Bureau of Mines. He suggested that you would probably be willing to undertake this investigation.

It is difficult for us to understand how there can be any introduction of lead into the system of the wearer of dentures made from this material since vinylite is unacted upon by dilute acids and alkalies, and the water

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Dr. R. E. Kehoe

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absorption at 37°C. has been determined to be of the order of 0.25% in 168 hours and not much more than this in a much longer time. Incidentally, the color of the resin is known to remain constant in the mouth for at least two years.

In any case, the amount of lead present in finished dentures is small. A full upper and lower set of dentures weighs not more than forty grams. Since lead stearate contains 26.8% of lead as metal, the total content of lead in a very large set of dentures would be 107 mg.

Mr. Yant stated that a daily intake of as much as two milligrams of lead has been found to be harmless. At this rate, a set of dentures would have to disintegrate completely in approximately fifty-days in order to approach this limit, and this of course is impossible.

Would you, therefore, on the basis of your expert knowledge of this subject, be willing to state definitely that such a material would be harmless. If not, will you kindly let us know whether you will undertake whatever investigation you may deem necessary and give us an approximate idea of its cost, and of the time required.

Yours very truly,

Edward E. Marbaker

E. E. Marbaker, Ph.D.,
Research Department.

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P.S. We are sending you under separate cover a finished denture molded from resin containing lead stearate and a blank similar to that from which the denture was made.

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