

US EPA ARCHIVE DOCUMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Dow Corning Q9 5700. EPA Reg. No. 34292-1

DATE: MAY 27 1976

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TO: PM No. 31 (J. Tavano) and TOX

THRU: Chief, Chemistry Branch *gbc*

Dr. R. Engler (TOX memo of 4/23/76) has deferred to us on the possible exposure of man to the product Dow Corning Q9 5700 which is used to treat fabrics (socks) that are worn by man.

D.C. Q9 5700 contains 42% 3-(trimethoxysilyl)-propyl(dimethyl-octadecyl ammonium chloride, 50% methanol and [REDACTED] Information and directions for the use of D.C. Q9 5700 are contained in the Company's Bulletin # 19-015. The primary use of this product is for preservation of many types of fibers, fabrics and threads, including finished articles such as socks.

An aqueous solution of the chemical is to be applied to textiles (normally as a final finish) by padding, soaking or exhaust methods of concentrations in the range of 0.1-1.0 weight % of active ingredient (the 42% quaternary ammonium salt). The actual concentration necessary for a particular textile is to be determined by the user prior to commercialization of the textile. The textile is then dried at temperatures from ambient to a maximum of 100°C.

These directions for use are of a general nature and no specific use pattern is presented for the proposed treatment of socks. While this information would be useful in our evaluation of the potential exposure to the wearer, the prime consideration as far as the use is the amount of active ingredient present on the treated fabric (in this case the % by weight on the treated sock material).

The second consideration is the amount of chemical that will leach from the treated fabric (as a result of perspiration or from getting the fabric wet). A leaching study is available in the submission. In this study, cotton, polyester and cellulose acetate were treated with a 0.4% solution of ¹⁴C-labeled compound. The fabrics were dried and then "washed" repeatedly to remove any unbonded chemical. The "washing" consisted of placing the treated fabric in a closed beaker with water (water to fabric ratio of 1000:1). The amounts of ¹⁴C activity remaining on the various fabrics after eight washings were the following: cellulose acetate, 97%; cotton, 84%; and polyester, 54%. This experiment does not

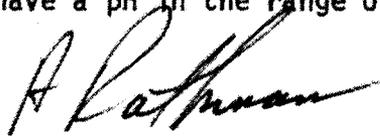
Manufacturing process information not included.

demonstrate leachability from treated fabrics under home or commercial washing conditions with agitation, detergents, and hot water. It demonstrates only the relative binding strength of the three fabrics. Additional tests were conducted (no specifics given) where the amount of ^{14}C labeled material on the fabric was varied. The Company notes that there was a direct correlation between the amount initially applied and the amount which remained after washing. We note that the differences in the fabric also result in differences in leachability when the treatment rate is constant. Therefore, information should be submitted on the type of types of fabrics that will be treated and the amount of active material that may leach from these fabrics when subjected to home or commercial laundering.

For estimating human exposure, we suggest an experiment in which treated fabric is extracted with a synthetic solution simulating human sweat. See item 4 for composition. (Reference for model solution: "Blood and Other Body Fluids", Biological Handbooks).

To summarize, we are unable to provide information to TOX on the possible exposure to man from wearing socks (or any other garment) treated with Dow Corning Q9 5700 until we have the following information:

1. The amount of active ingredient that will be present in the treated garment (socks) from a commercial type application (% by weight in the fabric).
2. The type or types of fabrics used in the manufacture of the socks (i.e. cotton, wool, polyester, etc.).
3. The amount of material that may leach from the fabric(s) when laundered under home or commercial conditions.
4. Extractibility of the active component by a solution simulating human sweat. This solution should contain 99% water, 0.3% sodium chloride, 0.2% potassium chloride, 0.3% lactic acid, 0.05% amino acids (lysine), 0.4% urea and 0.01% phenol and should have a pH in the range of 4-6.5


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