The aluminum and silicas were in all probability associated either with the talc molecule, or additives such as kaolin, or the base material from which the talc was derived.

Known Health Effects of Talc

Much of our knowledge of the health effects of talc is derived from studies of occupational exposures in its mining, milling, and industrial use. In extrapolating this knowledge to the cosmetic use of talcum powder, it must be recognized that the pattern of exposures in the use of talcum product varies markedly from person to person, not only in frequency of use but also in amount and in location.

In contrast to industrial exposures where the pattern is likely to be more continuous with accompanying peaks, exposure in the use of cosmetic talcum products is very intermittent with peak exposures dominating. The exposure pattern may continue a lifetime, especially if the use of talcum is established in the earlier years as a part of personal habits. The air-borne dosage to workers from industrial exposures to talc that have resulted in injury to health were undoubtedly much higher, however, than would be predicted from the use of cosmetic talcum products.

Mining, Milling, and Industrial Use

The clinical entity of talc pneumoconiosis, "talcosis," has been observed repeatedly in workers with long exposure to talc in its mining, milling, and industrial use.[14-17] Elongated, terminally clubbed pulmonary fibrous bodies, both segmented and unsegmented and similar in morphology to ferruginous bodies, have been found in talc workers, but these workers had received a mixed exposure—to talc, tremolite, anthophyllite, and silica.[18,19] In one study[20] the mortality rate from cancer of the lung and pleura was four times greater for a group of talc workers than for the general population. In pulmonary cancer from asbestos, the role of fibers and trace metals is uncertain. Some investigators have assumed the fibers play a dominant and direct role; more recent investigations indicate that the fibers may have been only an index concealing a spectrum of unidentified agents and relationship.[13]

Surgical and Cosmetic Use

The only reported cutaneous reactions from the use of talcum powder are talc granulomas, and these have been rare.[21,22] Talcum powder, however, is no longer used on surgical gloves and should not be applied to broken skin. Occasionally, perfume oils used in talcum powder formulations sensitize the skin and produce dermatitis.[23,24]

Conclusions

With the exception of 4 of the 22 cosmetic talcum products analyzed, the levels of free silica, cobalt, nickel, chromium, and manganese were generally of a low magnitude and within a narrow range. It is not known whether the four products represent a significant proportion of sales in the industry or to what extent the sources of the talc in these four formulations are the same as sources of talc specified for use in other talcum products in the competitive market. The levels of silica, chromium, and nickel in these four products are sufficiently high, however, to be of concern in their potential to cause disease.

All of the 22 talcum products analyzed have an appreciable fiber content, ranging from 8 to 30% by count of the total talcum particulates, and averaging 19%. The fibrous material was predominantly talc but probably contained minor amounts of tremolite, anthophyllite, and chrysotile as these are often present in fibrous talc mineral deposits. Cosmetic talcum products should be included as a source of the fibers, from which may be derived ferruginous bodies observed in the lungs of humans. The meaning of the presence of these ferruginous bodies, however, is uncertain.

Industry has the know-how to safely handle fibrous material as well as toxic metals such as nickel, chromium, cobalt, and manganese once adequate criteria have been established. Unknown significant amounts of such materials in products that may be used without precautions may create an unsuspected problem. For this reason continued research and investigations and communication of findings are necessary in this area.

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Human Factors Association of Canada

On June 1 a group of 29 people gathered in Toronto, Canada, and formed the Human Factors Association of Canada. It is anticipated that the Association will have membership throughout Canada and will represent interests of the many disciplines concerned with man's functioning in his physical and machine environments. The following officers were elected: President, Dr. R. B. Bromiley, Vice-President, Dr. E. Llewellyn Thomas, Secretary-Treasurer, Mr. Ronald E. F. Lewis. The following were named Directors: Dr. J. R. Brown, Dr. A. C. Bryan, Dr. Ruth Hoyt and Mr. J. F. Martin. Correspondence should be addressed to: Secretary-Treasurer, Human Factors Association of Canada, c/o Defence Research Establishment Toronto, Box 2000 Downsview, Ontario, Canada.