

FILE NAME: Talc (TALC)

DATE: 2011

DOC#: TALC131

DOCUMENT DESCRIPTION: Journal Article - Industry and Cosmetic
Uses of Talc with their Implications on Health

Industry and Cosmetic Uses of Talc with their Implication on Health

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Talc's softness, whiteness, lamellarity, inertness and affinity for organic chemicals make it valuable for industrial and domestic applications. The largest consumers are the paper and ceramic industry; only 5% is used as cosmetics. It is also used for preserving animal feed, and a carrier for drugs, insecticides, pesticides and chemicals. Talc was introduced as baby powder in 1894 and advertised aggressively worldwide. Widespread and indiscriminate use soon raised concerns about its implications for health. The IARC found that talc containing asbestiform fibres is carcinogenic to humans, but inadequate evidence to implicate talc not-containing asbestiform fibres. Pulmonary manifestations of talc inhalation include talcosis, talcosilicosis, and talco-asbestosis. Drug-users administering talc-adulterated oral medications intravenously develop pulmonary granulomas, fibrosis and irreversible pulmonary hypertension. Worldwide reports reveal talc inhalation is fatal to infants; it coats and dries mucus membranes, causes hemorrhage, edema, desquamation of bronchial epithelium, and clogs and compromises mucociliary clearance; larger quantities completely obstruct airways. Progressive diffuse pulmonary fibrosis is a recognized sequel to massive aspiration of baby powder. IARC has classified perineal use of talcum powder as a possible ovarian carcinogen, while a recent study has found that perineal talcum powder increases the risk of endometrial cancer among postmenopausal women. There is a need to raise public awareness of the serious risks associated with the use of talcum powder and for legislation to protect the health of the uninformed who represent the poorer segment of the community, and infants and young children. The dangers associated with cosmetic use of talc outweigh any possible benefits.

IeJSME 2011: 5 (1): 10-16

Key words: Endometrial, ovarian cancer, pulmonary fibrosis, granuloma, pulmonary hypertension, talc inhalation.

Talc (talq) is derived from the Greek word meaning pure¹. It is a mineral composed of hydrated magnesium silicate with the chemical formula $H_2Mg_3(SiO_3)_4$ or $Mg_3Si_4O_{10}(OH)_2$. Its natural formation starts from soapstone composed of talc, chlorite, mica, quartz, tremolite, magnetite and iron. It is the softest rock on earth, non-porous, weighs around 9 kilograms per cubic foot, does not stain, burn, or attacked by acids. Being metamorphic, soapstone gradually changes over time, in the presence of carbon dioxide and water (carbonation), from hard dense serpentine to steatite that contains 50-80 percent talc. This more coarse-grained soapstone finally metamorphoses to pure talc. Some 7.052 million tonnes of talc is mined annually worldwide. Currently, after China, the world's largest talc-producing countries are the U.S., India, Finland, Brazil and France. Talc de Luzenac, part of Rio Tinto's Luzenac Group operates the world's largest talc mine in southwest France. Other producers are Spain, Australia, Austria, Italy, Russia, and Democratic Republic of Korea².

Industrial Uses of Talc

The five characteristics that make talc a valuable mineral for industrial and domestic applications are first its softness – that makes it valuable to industry; second, its chemical inertness, third, its lamellarity, fourth, its whiteness, and fifth is its affinity for organic chemicals³. Talc has been used since antiquity; the ancient craftsmen of Mohenjo-Daro and Harappa engraved seals with representations of animals and mythological figures, and created sculptures, vessels and bosses from steatite 5000 years ago. They subjected their work to heat to generate a hard, white lustrous, enameled surface. The incredible carvings in stone at Belur, Halebid and Sravanabelagola, India that date to 1100AD attest to the remarkable, workable, and durable qualities of talc⁴.

The largest current consumer of talc is the paper industry that mixes talc with pulp for making its product. The talc acts as a filler that adds whiteness,

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