of rock and carbonate a little amount of tremolite was detected. Neither other types of anphybolic asbestos nor chrysotile were detected in any amount in rocks and in inclusions.

Talc specimens were found very commonly contaminated by chlorite. No anphybole or chrysotile minerals were detected in any of the examined talc specimens.

Free silica content in this talc is discussed. by x-ray diffraction neither Parmeggiani in 1948,[20] nor Rubino in 1963,[21] nor Pooley in 1972 have found detectable free silica amount (quartz peaks) in mineral talc powdered specimens. By contrast an x-ray diffractogram performed by Jerry Krause (Colorado School of Mines Research Institute — Personal communication in 1974) on samples of commercial Val Chisone talc powder has shown a minor amount of chlorite and quartz plus very minor to trace amount of magnesite and dolomite in addition to talc.

This could be due to some microinclusions in talc, observed also by Pooley, which, as well known, are not even detected, and then eliminated, by means as pre-milling photoelectron screening used in Val Chisone mills.

Analytical examinations conducted by Grill[22] on mineralogical composition of rock strata in Germanasca Valley have shown that is not possible to state an average value for quartz amount in footwall rocks. This value can vary in a range which is assumed by Parmeggiani in 1948[20] to be from 10 to 25%. Rubino[21] has indicated an average amount of 45% in the strata mined in 1963.

Environmental Determinations

Environmental data were available for mines and mills since 1948. In sampling and measuring airborne particulate contaminant, termic precipitator and optical microscopy for dust count were used until 1964: these measurements were performed by the mining company.

Since that year determinations were carried out by the Department of Occupational Medicine, Turin University, using membrane collection technique and optical microscopy. Conditions in microscopy examinations were the following: enlarging 500 x, transmitted light in phase contrast for free silica, polarized and dark field for fiber count.

The trend of workroom air total dust in respirable range (0.5 - 5 μ as defined by British Medical Research Council criteria) and expressed in mppcf is visualized in Fig 1 for the whole period of observation of the exposed workers.

The trend was obtained by linking the points corresponding to the dust level in the years in which air dust determinations were carried out. As no changes modifying the environment occurred before 1950, dust level in the years 1920 - 1950 was assumed to be uniform and equal to that of 1948. The decrease of dust content from 1950 to the actual values in mines is due to the successive applications of means of technical prevention which can be summarized as follows: Period before 1950 was characterized by dry drilling and the absence of any forced ventilation system.

Since 1950 wet drilling was introduced and more widely applied in the following years.

Forced ventilatory system was applied in the years 1958 - 1959 by air introduction and consequent dilution of dust until 1963 and by complete exhaust system after that year.

It should be noted parenthetically that adoption of prevention means was encouraged by the law n. 198 of March 4, 1958 on Rules of Policy of Mines, which establish in the mines a limit of 650 particles (in the range 0.5 - 5 μ) per cubic centimeter (that is 18.41 mppcf).

Actual values of dust level in the mills were obtained by successive improvement of dust suction systems.

Table 13 shows a remarkable difference of free silica amount in air dust respectively in the mines and in the mills and within the mines jobs between drilling and other operations. This is due to the high content of quartz in footwall rocks and inclusions as opposed to the absence of free silica in talc minerals.

The small amount of free silica in mills operations is due, as above mentioned, to the actual incomplete screening of talc inclusions. The same explanation could be given for the very small number of fibers in air, caused by possible microinclusions of rock containing little amount of tremolite.

**"An examination of Italian Mine Samples and Relevant Powders", J. Lightfoot, G. A. Kingston, F. D. Pooley, Department of Mineral Exploitation, University College Cardiff, 1972.

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