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ASBESTOS CONTENT IN HUMAN LUNGS RELATED TO DISPERSION FROM NOA IN ROCKS

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The Naturally Occurring Asbestos (NOA) and Naturally Occurring asbestiform minerals Non Asbestos classified (NONA) in North Western Italian Alps is known since many years and described in a few papers (e.g., 1, 2, 3). Whereas the noxiousness due to professional exposure to asbestos is well known, there are few information and no one dealing with natural environmental exposure occurring to general population living respectively closeness to NOA in outcropped rocks. Nothing is known about exposure to NONA.
According to several investigations, chrysotile and tremolite/actinolite asbestos represent the NOA content in the rock of these areas. Among NONA, asbestiform antigorite is frequent but in many cases it is not possible to distinguish it from chrysotile by SEM-EDS technique.
To better understand type and amount of asbestos respired by people lived in areas where lithologies and their NOA and NONA contents are known, we investigated by SEM-EDS lung tissues of 8 women not dead owing to asbestos correlated pathologies, 4 of them lived in Susa Valley and 4 in Lanzo Valleys (NW Italy).
Many different inorganic fibrous species, mainly natural minerals, have been detected in lungs. Tremolite/actinolite asbestos is present in 7 out of 8 cases. Chrysotile and chrysotile/asbestiform antigorite are less frequent. Amosite and crocidolite have been detected only in 2 cases related to people lived in a quite urbanized area.
Based on the geological and urbanization data of the area where investigated people lived, the air dispersion sources of amosite and crocidolite are solely attributable to anthropogenic sources (i.e. asbestos containing materials); tremolite/actinolite asbestos are related to natural sources (i.e. NOA); chrysotile and asbestiform antigorite cannot be used as environmental exposure marker because they are dispersed from both types of sources.
On the basis of the obtained data, it is evident that in some cases, due to the dispersion of fibers from NOA rocks and from anthropogenic sources, people can undergo to a significant asbestos exposure comparable to professional one.

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