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Multi-scale mapping of potential Naturally Occurring Asbestos (NOA) occurrences in France and characterization of asbestos-bearing rocks

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The term asbestos is a commercial term referring to six silicate minerals, listed as human carcinogen by world health authorities. Asbestos was banned in France since 1996 but since a decade, a new focus was done on Naturally Occurring Asbestos (NOA). NOA are fibrous minerals that occur as natural components in some rocks and soils, as opposed to asbestos in commercial products. Human activities (such as mining, agriculture, construction or urban development) and natural weathering processes are likely to release NOA in the air. Because NOA forms in specific rocks and geologic conditions, it is possible to predict geologic environments that may host NOA.

A multi-scale geological mapping program is going on in France to identify lithologies that are likely to contain asbestos-like minerals leading to the establishment of maps of potential asbestos-bearing rocks at different scales. Major occurrences concern ultrabasic, basic and dolomitic rocks affected by greenschist to amphibolite-facies metamorphism and/or hydrothermal metasomatism. Unusual occurrences were also identified, as in alkaline metagranitoids, dolerites and talcschists.

To manage NOA-related risks and control worker exposures to asbestos, new upcoming regulations will come into force in France, including the prior identification of asbestos in natural soils or rocks likely to be impacted by the execution of works. Maps of potential NOA occurrences will therefore constitute reference documents for such studies. Moreover, regulations will lead to the standardisation of protocols for sampling, analysis and characterization of natural materials likely to contain asbestos.