



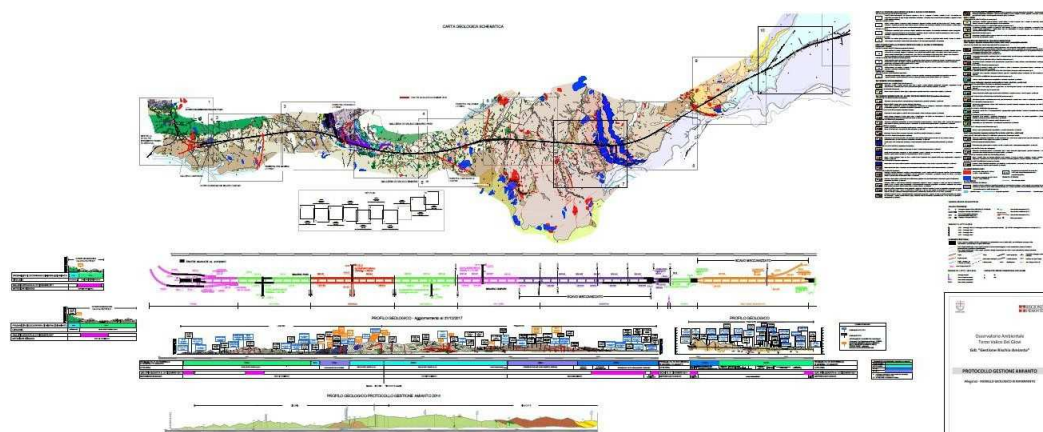
## “Terzo Valico dei Giovi”, excavation of tunnels in asbestos bearing rock

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The new high-speed/high capacity railroad "Terzo Valico dei Giovi" runs mainly through tunnels into rock formations known as "Ophiolites" that potentially contain asbestos. During the project's approval phase, the CIPE (Inter-Ministerial Committee for Economic Planning) has focused on the Asbestos issue, prescribing the definition of action execution procedures in the event of the objective proof of the detection of asbestos.

The **Environmental Observatory** has set up a Working Group to draft the *Asbestos Management Plan for Terzo Valico*. Based on the geological model, it defines the "Probability of Occurrence of Asbestos-bearing Minerals" for each lithological formation with three asbestos-finding probability classes: Negligible, Medium-Low and High.



In figure, a geological model

The **Asbestos Management Plan** establishes the procedures and frequency of the excavated material characterization operations. In the case of asbestos presence, the threshold value that authorises soil management in terms of by-product is equivalent to 1000 mg/kg. For conventional tunnelling, material sampling is carried out directly at the excavation front from 8 different points of the excavation front.

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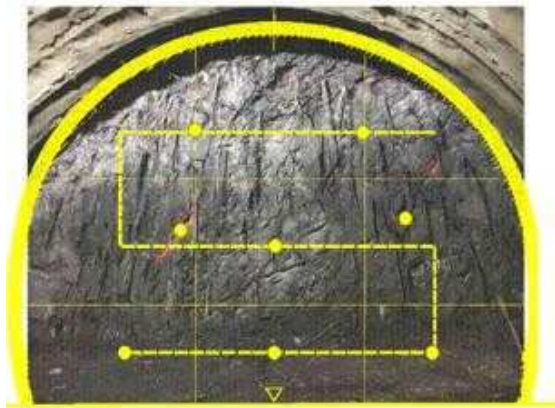
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*In figure, a sampling grid*

**For tunnels excavated with Tunnel Boring Machine** (also known as TBM), the excavation front is inaccessible and material is sampled once the rubble is on the conveyor belt. Special lab analysis, like Scanning Electron Microscope (SEM) and Phase Contrast Microscopy (PCM), allow to verify the presence of asbestos in the rock material in 48 hours with an accuracy of about 100 mg/kg.

**Specific monitoring points have been installed** to detect any dispersions of asbestos fibres into the air, starting from the source of emission, moving out progressively toward soil deposit sites. Additional monitoring points detect the emission in sensitive receptors (schools, buildings, etc).

**Government authorities and supervisory bodies can consult the rock mass and air analyses results by mean of on purpose databases.** Special attention has been paid to the management and dissemination of the collected data to the citizens. For this reason, have been develop tools for communicating this information to the citizens by a web portal. The experience gained at the "Terzo Valico" sites can be used to create valid models to be applied, after suitable adjustments, to other infrastructure projects impacted by similar issues.

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